



Milwaukee **Water Works**

Safe, Abundant Drinking Water.

2004 **Annual Report**

*An Enterprise Fund
of the City of Milwaukee*



**Mayor
Tom Barrett**



**Jeffrey J. Mantes
Commissioner,
DPW**



**Mariano
Schifalacqua
Commissioner,
DPW**



**Carrie Lewis
Superintendent,
MWW**

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Milwaukee Administration

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City Attorney
Grant F. Langley

City Comptroller
W. Martin Morics

City Treasurer
Wayne F. Whittow

Commissioner of Public Works
Mariano Schifalacqua
(retired March 2004)

Jeffrey J. Mantes
(appointed July 2004)

Director of Operations
DPW James P. Purko

City Engineer
Jeffrey S. Polenske

Utilities and Licenses Committee

Ald. James N. Witkowiak,
Chairman

Ald. James A. Bohl, Jr.,
Vice Chair

Ald. Joseph A. Dudzik

Ald. Robert W. Puente

Ald. Willie C. Wade

2004 Milwaukee Common Council

President

Willie L. Hines, Jr., District 15

Ashanti Hamilton, District 1

Joe Davis, Sr., District 2

Michael S. D'Amato, District 3

Robert J. Bauman, District 4

James A. Bohl, Jr., District 5

Mike McGee, Jr., District 6

Willie C. Wade, District 7

Robert G. Donovan, District 8

Robert W. Puente, District 9

Michael J. Murphy, District 10

Joseph A. Dudzik, District 11

James N. Witkowiak, District 12

Terry L. Witkowski, District 13

Tony Zielinski, District 14

2004 Superintendent's Message

The Milwaukee Water Works (MWW) is the drinking water utility owned by the City of Milwaukee. With Lake Michigan as our source, we provide clean, safe drinking water to residents and businesses of the City of Milwaukee and 14 neighboring communities.

The Water Works is a self-financing enterprise regulated by the Wisconsin Public Service Commission, the U.S. Environmental Protection Agency (EPA), and the Wisconsin Department of Natural Resources. In 2004, the Water Works delivered over 44.3 billion gallons of pure, clear Lake Michigan drinking water. Our average daily pumpage was 121 million gallons per day.

We treat Lake Michigan water at two plants, passing the water through multiple treatment process barriers that keep illness-causing microorganisms from our drinking water. The primary form of disinfection is ozonation, in which ozone gas is bubbled through the water. The highly reactive gas destroys illness-causing microorganisms, controls taste and odor, and reduces chlorinated disinfection byproducts. Following inactivation of microorganisms, the processes of coagulation, settling, and filtration remove additional particles.

Our 350 dedicated employees in water treatment, distribution, engineering, customer service, and administration are committed to providing a reliable supply of superior quality water.

Highlights of 2004 include:

Unsurpassed Water Quality — The EPA requires water utilities to test for 90 regulated contaminants in an ongoing basis. The Milwaukee Water Works tests for over 450 known contaminants to assure you receive the highest quality water possible. Our drinking water quality continues to surpass all state and federal regulations, without exception.

Our diligence in exceeding high standards for quality led to recognition of Milwaukee's water as among the highest quality in the nation. In an evaluation of the tap water in 101 major U.S. cities, *Men's Health Magazine* awarded Milwaukee a water quality grade of "A" in its March 2004 edition. We are pleased to be one of only 12 cities to receive the "A" grade.

An Asset to Taxpayers and the City — The Water Works paid to the city a \$7.9 million payment in the form of a payment in lieu of taxes in 2004. The payment directly offsets the city tax levy, reducing the 2004 tax rate by \$0.36 per thousand dollars of assessed valuation. The Water Works pays city departments for municipal services we use. That total was \$13.6 million in 2004.

Kilbourn Reservoir takes on a new role — The historic Kilbourn Reservoir, near Humboldt and North Avenues, was decommissioned in 2004 while plans were made for an enhanced park setting. The Riverwest neighbors worked with the Milwaukee Water Works to design a plan to meet the needs of the Water Works and enhance the property and the community's enjoyment of it. You will find more details elsewhere in this report.


Carrie M. Lewis
Superintendent


Dale E. Mejaki
Administration and Projects Manager

Milwaukee Water Works Administration

Executive

SuperintendentCarrie M. Lewis
Administration and Projects ManagerDale E. Mejaki

Business

Water Business ManagerEarl Smith, Jr.
Water Accounting ManagerMenbere W. Medhin
Water Revenue Manager.....Richard D. Rasmussen
Water Meter Services Manager.....Jeffrey Novak

Plants

Water Plant Manager – North.....Daniel Welk
Water Plant Manager – South.....John Gavre

Water Engineering

Water Engineering ManagerDinah G. Gant
Water Mains Design Engineer.....Mark J. Scheller

Distribution

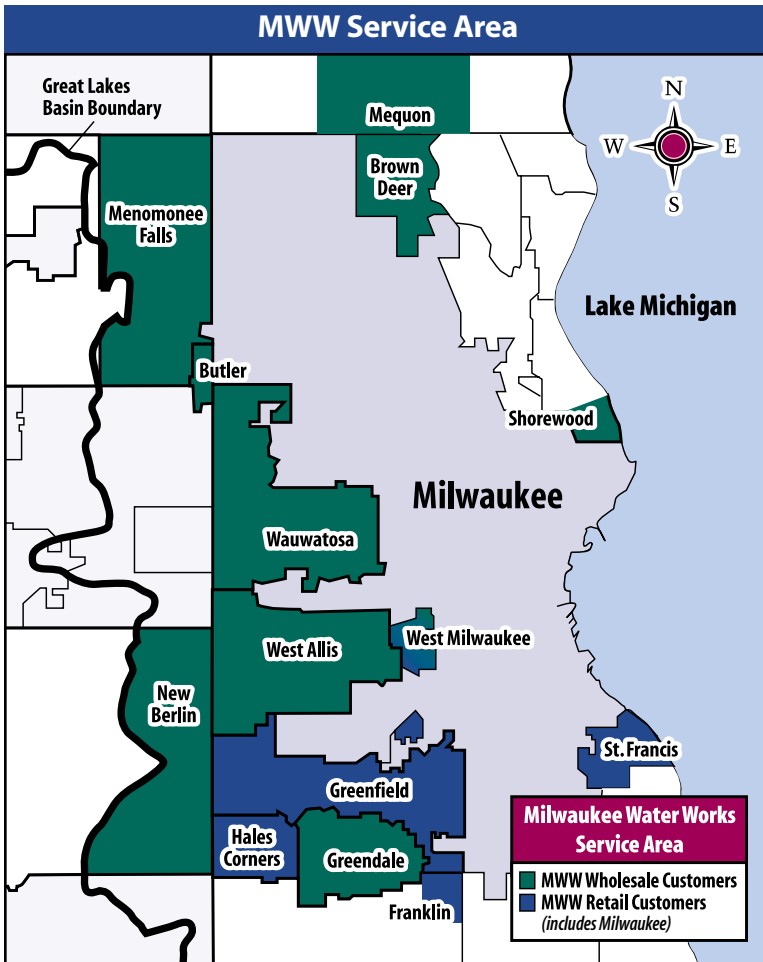
Water Distribution ManagerLaura B. Daniels
Water Distribution District Supervisor-NorthGary K. Gibson
Water Distribution District Supervisor-South.....David Goldapp

Water Quality

Water Quality ManagerLon A. Couillard

841 North Broadway, Room 409 • Milwaukee, Wisconsin 53202
www.water.mpw.net

24 Hour Water Control Center: (414) 286-3710
Customer Service Monday-Friday, 7:30 a.m. to 5:00 p.m.
(414) 286-2830 • Fax (414) 286-2672 • TDD (414) 286-2025



When you hear “Water Works,” think of a cool, refreshing glass of water. We treat Lake Michigan water to provide high quality drinking water to 831,000 people in Milwaukee and 14 neighboring communities.

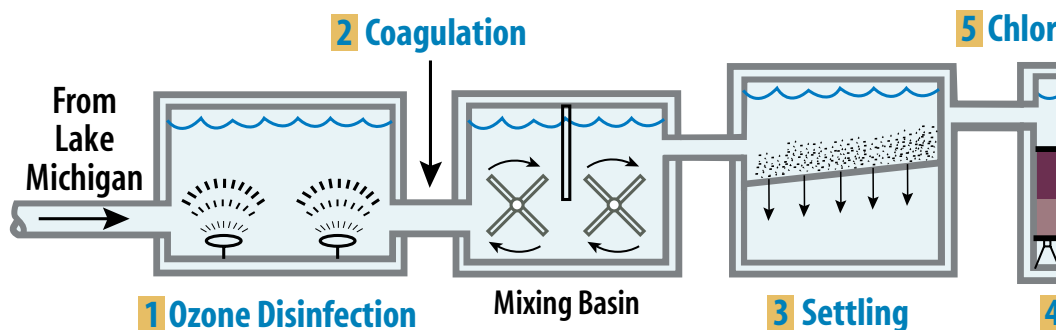
Our wholesale customer communities provide our drinking water through their own water utilities. They bill their customers and maintain the distribution systems in their communities. Our wholesale customers are Brown Deer, Butler, Greendale, Menomonee Falls, Milwaukee County Grounds, Shorewood, Wauwatosa, West Allis, and We Energies Water Services, which provides our water to some areas of Mequon. New Berlin has signed a contract as a wholesale customer and will receive Milwaukee water in 2005.

Our retail customer communities receive full service from MWW, including drinking water, customer billing, and maintenance of their distribution systems. Our retail customers are Greenfield, Hales Corners, St. Francis, West Milwaukee and a part of Franklin.

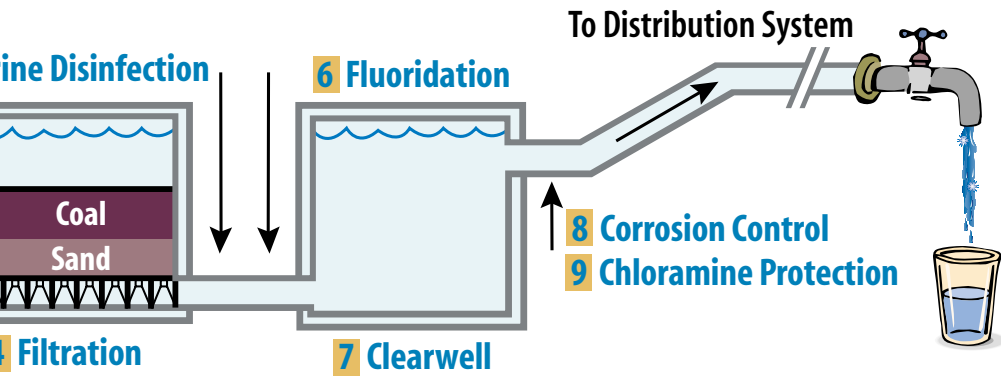
In a unique arrangement, West Milwaukee receives billing services from MWW and maintains its own distribution system.

We appreciate the trust these communities have in the Milwaukee Water Works and our service, and we value our good working relationships with them as their water provider.

Milwaukee Water Works Drinking Water Treatment Process



- 1. Ozone Disinfection** — Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces chlorinated disinfection byproducts.
- 2. Coagulation** — Very fine particles in the water adhere together to form larger particles as the coagulant alum is mixed into the water. Large particles are more effectively removed during the settling and filtering processes.
- 3. Settling** — Settling is the process in which solid particles settle out and are removed from the water.
- 4. Filtration** — The water is slowly filtered through 24" of anthracite coal and 12" of crushed sand to remove very small particles.
- 5. Chlorine Disinfection** — After filters, chlorine is added as a secondary disinfectant. This provides extra protection from potentially harmful microorganisms.



- 6. Fluoridation** — Fluoride, when administered at low levels, is proven to help prevent tooth decay.
- 7. Clearwell** — Treated water is stored in deep underground tanks and pumped as needed through the distribution system.
- 8. Corrosion Control** — A phosphorous compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into the water.
- 9. Chloramine Protection** — Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

Milwaukee Water Works

Safe, Abundant Drinking Water.

Learn more about Milwaukee Water at: www.water.mpw.net.

Milwaukee Drinking Water Receives an “A” for Quality

Milwaukee’s drinking water is rated among the highest quality in the nation by an evaluation of water in 101 major U.S. cities. Milwaukee was one of 12 cities to receive a water quality grade of “A” in the report card by *Men’s Health Magazine*.

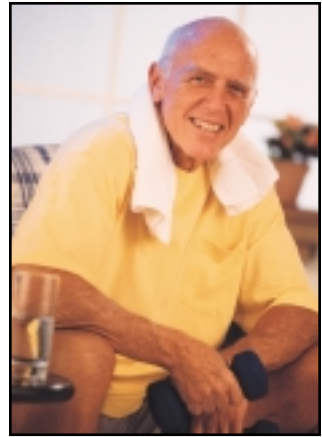
The Milwaukee Water Works (MWW) provides drinking water for 831,000 people in Milwaukee and 14 neighboring communities.

The *Men’s Health Magazine* report in the March 2004 issue focused on five contaminants: arsenic, bacteria, lead, trihalomethanes and haloacetic acids.

Milwaukee’s drinking water utility treats Lake Michigan water using a multiple barrier process including ozonation and filtration. The source water has undetectable amounts of arsenic. Ozonation destroys illness-causing microorganisms, neutralizes taste and odor, and reduces chlorinated disinfection byproducts such as trihalomethanes and haloacetic acids. Phosphate in the treated water provides corrosion control to prevent lead from leaching off plumbing fixtures and pipes in older buildings.

Current water quality data for Milwaukee’s drinking water surpasses state and federal regulations.

Men’s Health evaluated U.S. Environmental Protection Agency (EPA) water quality reports with assistance from the Environmental Quality Institute at the University of North Carolina, the National Resources Defense Council, and Rutgers University. The report compared results to “ideal levels” recommended by the National Academy of Science and EPA’s maximum contaminant limit (MCL) goals.



Milwaukee leads the nation in providing high quality drinking water.

The Milwaukee Water Advantage for Business

Milwaukee water provides an ideal platform for water-intensive industries and provides outreach with economic development agencies to encourage so-called wet industries to expand or locate in the Milwaukee Water Works service area.

Milwaukee has an abundant supply of high quality water and competitive, stable water rates. Ozone disinfection removes taste and odor. With Lake Michigan as its source, the water is free of radon, a cancer-causing agent that can be found in well water. Other advantages for both individual and manufacturing customers are reliable water pressure, an average temperature of 46° F, moderate hardness (136 mg/L) and low total dissolved solids (180mg/L). Because Milwaukee water is moderately hard water softeners are generally not necessary.



Linnwood Water Treatment Plant Laboratory

2004 Year in Review

In 2004, the Water Works delivered over 44.3 billion gallons of pure, clear Lake Michigan drinking water. Average daily pumpage was 121 million gallons per day.

MWW water surpasses all federal and state standards for water quality. Not only is Milwaukee's drinking water high quality, it is a good value. The cost per person per day for water is 8.5 cents, not including service charges.

During 2004, the utility collected \$72.7 million in 2004 to finance its operations. The Water Works paid to the city a \$7.9 million payment in the form of a payment in lieu of taxes. The payment directly offsets the city tax levy, reducing the 2004 tax rate by \$0.36 per thousand dollars of assessed valuation. Other payments to city departments for the municipal services used by the Water Works totaled \$13.6 million in 2004.



Linnwood Treatment Plant Filter Beds

Water Quality Section

Water Quality Section staff were the first work group to implement a new Computerized Maintenance and Management System (CMMS) deployed by the Plant Automation Group to Plants facilities in the fall of 2004. The new software package is an improved, streamlined version that replaced a preventive maintenance system in place since 1999. The CMMS allows the Water Quality Section to schedule, complete, and document routine maintenance and quality control checks on over 175 pieces of online water quality monitoring equipment at both water plants. The data from this equipment is critical to optimizing the water treatment process and assuring the highest quality water possible for our customers.

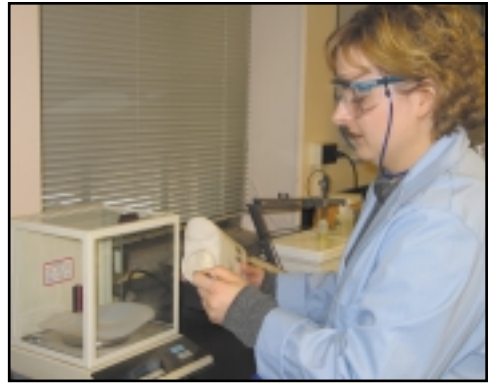
Regulatory monitoring to meet the requirements of the Safe Drinking Water Act continued in 2004. Individual filter bed turbidity monitoring was a focus of the national surface water treatment rule known as IESWTR, and is a large part of the upcoming long-term, or LT2ESWTR, regulations. Water Quality responsibilities included maintaining an ongoing filter bed turbidimeter quality assurance/quality control program. The components are daily grab sample comparisons, monthly calibration checks, quarterly calibrations, and water quality challenge studies.

Microbiological evaluation of water quality was another major activity. Staff developed a comprehensive, expanded microbiological monitoring effort to document biologically active filtration at the Linnwood Plant. This included daily sampling of individual filters and the use of four different types of culture media to measure biological growth on both a quantitative and qualitative basis.

Water Quality Section staff took a proactive stance in modifying the reporting format for the Wisconsin Department of Natural Resources (DNR) regulated water quality monitoring program of the distribution system at various sites for both Coliform bacteria and Heterotrophic Plate Count (HPC) bacteria. This was done to streamline the form and prepare for electronic data reporting in 2005.

Water Quality staff assembled the data and updated the format of the Consumer Confidence Report, or Water Quality Report, for 2004. The report, required by the U.S. Environmental Protection Agency and the DNR each year, was mailed to all Milwaukee-billed accounts between April and July. The MWW website was expanded to include access to additional Water Quality Reports.

Prompt and comprehensive response to customers regarding water quality concerns remains a high priority with Water Quality staff. A telephone message line, coupled with follow-through to address issues and arrange field visits as necessary, assured customers of the Water Works' commitment to provide the highest quality water.



Laboratory technician weighing microbiological culture media.



Left, chemist verifies readings of on-line instrumentation and right, laboratory at Howard Avenue Treatment Plant.

BUSINESS SECTION

Accounting Services

The Accounting Services group provides budgeting and accounting services for the Milwaukee Water Works. This includes developing the utility's budget, monitoring and analyzing expenditures, and processing contract and other vendor payments. It is also responsible for financial analysis and reporting of the enterprise's operations. This is accomplished in compliance with two separate reporting systems. The first is reporting in compliance with Generally Accepted Accounting Principles (GAAP), which is the basis for the enterprise's audited financial statements. The second reporting deals with complying with the requirements of the Wisconsin Public Service Commission (PSC), the utility's oversight agency, and is used to provide proper reporting and interaction with the PSC. The combined reporting functions serve both internal and external users of the financial information of the Water Works.

Meter Services

The size of a water meter refers to the diameter of the pipe at the inlet of the meter. Water meters can range from 5/8-inch to 12 inches in diameter. The weight of these meters ranges from 12 pounds to 3,300 pounds.

Employees in the Meter Reading unit read residential water meters on a quarterly basis with a computer-equipped van as they drive down streets past homes. In 2004 this operation performed 610,680 meter readings, or read approximately 97% of the electronic meters installed.

Commercial Meter Readers manually read the meters of the 1,000 largest customers on a monthly basis, adding up to 19,708 readings in 2004. Many of these large meters are located in underground vaults; monitors and confined space entry permits are required to safely read these meters. Commercial Meter Readers compare current usage to past usage to identify changes in seasonal or monthly patterns and report discrepancies for timely corrective action. Commercial Meter Reading staff also performed 15,588 manual reads involving investigations, some larger residential accounts, and meters that are located in hard-to-read areas.

Water Meter Investigators provide services to customers who report high bills and questionable account information. They make personal visits to customers' locations to verify meter, address, and water status information. They also perform inspections of interior plumbing fixtures to locate leaks for residential and small commercial customers.

Meter Repair Shop personnel enable the MWW to ensure that water meters accurately represent water consumption, give the customer fair value and the Water Works its appropriate revenue for water delivered. Large and small water meters are tested and repaired at this facility while staff install, exchange, and test meters in the field.

The program to change medium-sized water meters (1-1/2" and 2") to automatic meter reading (AMR) was completed in 2004 with 98% of the meters converted. Meter Shop personnel have adapted to all the demands of the AMR projects. All job classifications have demonstrated skill in meter installation and solving all types of electronic, plumbing, low pressure, and customer service issues in the field and shop. This diversely skilled work force will be a valuable asset in the continued maintenance of the new AMR system.

Large (three-inch and greater) meters are typically used in industrial applications and are not yet included in the AMR program. We continue to test these meters according to PSC



*Water Meter with
Radio Signal Transmitter*

requirements. Testing of large water meters involves isolating the meter and testing its accuracy by running a known volume of water through the meter. This is accomplished using a portable certified test meter by one of five field testing crews. Large turbine and electronic/magnetic meters are used to determine the water usage of large users, such as wholesale communities. Because of the high volume of water used, these meters are monitored 24 hours a day.

During 2004, the Meter Shop installed over 160 hose connections and handled over 60,250 linear feet (over 11 miles) of hose. These hose connections have enabled service-provider customers to remain open while repairs were performed on nearby water mains. Meter Shop personnel are on call 24 hours a day to support these activities.

Each year the Water Works is required to test a statistically determined random number of residential small meters. This is done as a quality control method to ensure the Water Works equipment gives the most accurate reading possible. The statistical model is based on installation date and year. We performed 675 statistical tests in 2004. Meter Shop staff installed 523 new water services resulting in 485 new meters in the system.

Customer Service

Customer Service employees respond to customer inquiries over the phone and at our service counter on the fourth floor of the Zeidler Municipal Building. The Customer Service Representatives are trained to meet all customer needs ranging from resolving billing inquiries to scheduling meter appointments. The Water Works Interactive Voice Response (IVR) system allows customers to access information about their account on a 24-hour basis including weekends and holidays. The IVR system processed 144,107 calls during 2004. Many customers prefer to speak directly with our Customer Service Representatives, and those employees served 70,484 customer contacts. Also in 2004, the Customer Service counter handled 4,166 customer inquiries, over 67,000 counter cashing transactions, and processed 53,966 payments that were dropped off at the Water Works offices.



A new customer service information system will allow customers to access account information online.

New Customer Information System

In February, the Milwaukee Water Works selected a vendor to replace the current Customer Information and Billing System. The new system's enterprise database and browser interface will provide a long-awaited advance in technology and improved reporting capability. The MWW project team and the vendor developed a comprehensive statement of work that

included ways to streamline business processes. The statement outlined new enhancements to help better serve customers and provide easier access to account information. Plans were made to upgrade the IVR system and to provide customer self-service via the Internet. The contract for the new system was signed in August. Programming, test case development, and training for the new system began with implementation of the system planned for 2005.

Billing and Collections

The Billing and Collections Section generates and collects the Municipal Services Bill. In addition to collecting for water charges, the MWW also collects charges and fees for other city departments (Sewer Maintenance Usage Charge, Solid Waste Fee, and Snow and Ice Fee) and the Milwaukee Metropolitan Sewerage District (MMSD Sewer Treatment Charges). In 2004, billing statements totaling over \$139 million were mailed on schedule to the utility's customers.



Customer Service Representatives served over 70,000 customers by phone in 2004.

Water Marketing

Activities of the Water Marketing Specialist are intended to raise awareness of the benefits of the high quality, abundance, and value of Milwaukee's drinking water. The more customers served and the more water sold, the larger the rate base will be over which MWW can spread operational costs and keep water rates low.

Of particular concern is encouraging water-intensive industries to expand or locate in the Milwaukee area. Water is the lifeblood of many manufacturers, food processors and brewers, biotech researchers, and the medical community. Across the country, water-intensive industry faces dwindling water resources due to multi-year droughts, depletion of groundwater, restrictive water quality regulations, and overpopulation of arid lands. The increasing demand for water and sewage treatment translates to higher operating costs for these businesses.

The Milwaukee Water Works and its service area offer a long-term solution for water-intensive business and industry.

In 2004, marketing activities included joining a multi-agency marketing group with the goal of targeting water-intensive industry in retention and attraction efforts. The group includes the Department of City Development (DCD), Milwaukee Economic Development Corporation (MEDC), Metropolitan Milwaukee Association of Commerce (MMAC), and the Milwaukee Metropolitan Sewerage District (MMSD). Representatives visited major customers of the MWW and MMSD, used the input to produce a joint promotional brochure, and provided information to water-intensive prospects.

MWW also established a relationship with Forward Wisconsin to join promotional efforts at the state, regional, and national levels. The Water Marketing Specialist served on the planning committee for Forward Wisconsin events in Chicago at the May 2004 convention of CoreNet, the world association for 7,500 corporate real estate executives and site selection consultants.

MWW provided marketing materials and worked with DCD to include five water-intensive industries as targets for the DCD Menomonee Valley strategy for industrial/ business recruitment.



Historic North Point Tower

MWW met with municipal wholesale and retail customers to provide new information and discuss any concerns they had about service.

The Water Marketing Specialist established a relationship with Pier Wisconsin with the goal of including the drinking water treatment story in the lakeshore Discovery World at Pier Wisconsin facility under construction.

For marketing materials, publications, and internal communications, the Water Marketing Specialist began development of a new logo and updated website, wrote news releases and informational memos, prepared Customer Service reference materials, submitted news about MWW for the DPW newsletter, and prepared and distributed the MWW Annual Report and annual Water Quality Report. To support conversion to a new Customer Information System, the Water Marketing Specialist designed and launched an employee newsletter with information and updates about the project.

For community outreach, the Water Marketing Specialist helped write the “Every Drop Counts” brochure about water conservation and water quality in partnership with MMSD, Urban Ecology Center, Schlitz Audobon Nature Center, and the Milwaukee Health Department; presented educational information to appropriate audiences such as Earth Day at the Urban Ecology Center and the Milwaukee Public Schools September beach cleanup, and provided information for the Public Policy Forum Water Resource Management study. The Water Marketing Specialist represented MWW at two MMSD Clean Rivers/Clean Lakes Watershed conferences, and the Wisconsin Water Association Leadership Council as Public Education Committee co-chair.

Building Customer Confidence

In July, the Milwaukee Water Works increased water pressure to about 190 customers in a south side area of Milwaukee known as the Wedgewood Neighborhood. The change was made to meet pressure requirements of the Wisconsin Department of Natural Resources. The area was bounded by South 68th Street, South 76th Street, West Crawford Avenue, and West Howard Avenue.

Customers and elected officials were informed in advance of the change. Letters were sent to each residence and as the project date approached, door hangers were left as a reminder. Water Engineering staff developed a systematic plan to change the pressure district boundary. This plan required Distribution forces to sequentially operate valves while thoroughly flushing the mains through identified hydrants.

Increasing the pressure in the neighborhood resulted in a few water main breaks, which were expeditiously repaired by the Distribution field crews. Due to the extent of work in the neighborhood, Water Works employees interacted directly with several customers and provided excellent customer relations. They did such a good job interacting with the public that some of the residents were on a first-name basis with crew members and even brought them cold sodas. The local alderman received phone calls from affected constituents who complimented the work crews’ performance and expressed appreciation for the increased water pressure.



Flushing a water main to ensure clean, safe water

Technical Services Section

These employees maintain the Water Works' information processing network.

During 2004 Technical Services replaced an Uninterruptible Power Supply (UPS) with a new UPS and additional battery backup sized to meet immediate and future needs for the primary data center. They also started the process of restructuring the primary data center to meet immediate and future needs to handle required additional servers. This included purchase and installation of racks and KVM switches. As planned, to take advantage of higher communication speeds available on the new switches installed in 2003, Technical Services upgraded server connections for a number of servers from 100 MBPS over copper to 1 GBPS over fiber.

Technical Services completed a security initiative to eliminate the use of the less secure Windows 95 and Windows 98 operating systems and to standardize all computers on Windows 2000.

To support this initiative and replace aging equipment, Technical Services purchased and configured over 75 new machines. Over 160 Water Works employees absorbed a full day of Windows 2000 training to prepare for the operating system upgrade. Technical Services also purchased and configured 15 printers to upgrade printing capabilities for the new Customer Information System.

Technical Service began replacing an aging file and print server and has plans to replace both domain controllers to support new security implementations. The group also began upgrading network backup systems because the amount of data to be backed up had outgrown the existing hardware capacity. Each of these projects will continue into 2005.

The systems and network security needs of the Milwaukee Water Works have expanded due to these projects and will continue to grow as future enhancements are deployed. The Technical Services security initiatives, under the direction of the Water Security Manager, include the deployment of firewalls, improved gateway security, intrusion detection and mitigation, vulnerability identification and elimination, system configuration monitoring, automated patch deployment, and centralized software management. In 2004, after a study of Water Works needs, Technical Services purchased additional hardware and software to help meet the goals of securely providing uninterrupted service for users and to mission critical applications. Installation of these products will be underway in 2005.

The Technical Services group is providing technical support for the Customer Information System replacement project.

WATER TREATMENT PLANTS

Linnwood Plant

In 2004, the Milwaukee Water Works Water Treatment Plants Division provided 44.3 billion gallons of water, a decrease of 3.9% from 2003.

The Linnwood Plant pumpage increased while the Howard Avenue Plant pumpage decreased. This was due to the three-month shutdown of the Howard Avenue Plant from March 26 to June 24.



Linnwood Water Treatment Plant

The shutdown was a result of the break of the 84" discharge main at the Texas Avenue pumping station. During that time, the Linnwood Plant was at full capacity to meet water demands of MWW customers. The Linnwood Plant delayed the scheduled spring maintenance activity for the south ozone contactors and the south coagulation/sedimentation basins until fall 2004 to ensure that adequate production capacity was available to meet water use needs.

As part of the ongoing filter maintenance program, Linnwood Operations and Water Quality staffs performed complete filter inspections on an additional eight of Linnwood's 32 dual-media filters. The inspections of the filters showed no ill effects of the extended run criteria to the overall performance and condition of the south filters. The benefits of having all filters on extended run criteria are: more effective filter run time while meeting water quality objectives, less water used for backwashes, less spent backwash water sent to the MMSD for treatment, and less water returned to the lake as allowed under the National Pollution Discharge Elimination System (NPDES) permit.

After successfully testing an electro-hydraulic filter effluent valve operator on one filter in 2003, the Linnwood Plant installed this type of operator on all of the 32 filters. This was a capital project coordinated by the Water Engineering staff. This efficient modulating valve operator greatly enhanced the stability of the filter valve operations, which greatly reduces filter modulations and improves filter effluent water quality.

During 2003, a problem arose when the softened ammonia carrier water temperature reached less than 38°F. At that temperature and below, ice would form in the eductors and this would result in a low vacuum situation and the underfeeding of ammonia. An outside vendor designed a double-walled carrier water steam heat exchanger and Water Engineering oversaw installation of the system. The unit began operations in November. To date the heat exchanger has allowed successful operations of the water eductor system to supply adequate vacuum during the low carrier water temperatures.

A major ozone process upgrade took place during 2004. The two original water bath liquid oxygen (LOX) vaporizers were replaced with two electric LOX vaporizers, selected for lower cost and maintenance. The new units were installed and put into operation in October. During that project, all the LOX piping was reinsulated and additional pipe hangers were installed.

2004 saw a number of other major capital projects begin or end; all were coordinated with Water Engineering staff. The north coagulation basin inlet and drain gates were replaced. The Riverside Pumping Station power upgrade was completed. New ultrasonic level gauges



New electro-hydraulic valve operator



Ammonia carrier water heat exchanger

were installed in coagulation basins, clearwell and filtered water reservoirs. A project to replace the surge valve at Riverside was completed. Planning began for installation of roof over ozone facilities and an internal power upgrade at Linnwood. Work got underway to remove trees that had grown over the clearwells.

On May 19, Linnwood raw water pump #7 dropped off-line due to an out-board packing sleeve failure. This pump was installed in 1938 and has a rated capacity of 80 MGD at the current head requirements. Linnwood maintenance staff did a complete take-apart to return the pump to service. They disassembled the pump, planned repairs, ordered parts, and had the pump back on line by June 9.

A number of security upgrades were conducted at Linnwood under the direction of the Water Security Manager. Card readers were installed on the remainder of the exterior doors at the plant, all doors were re-keyed, and an improved key control system was put in place.



Reassembling raw water pump #7

Proactive Efforts to Protect Customers from Lead

Milwaukee has taken a proactive approach to protecting customers from lead in drinking water. The Milwaukee Water Works has worked to optimize corrosion control as part of its water treatment process and conducts an ongoing monitoring program without a mandate from regulatory agencies.

Lead is one of 90 contaminants regulated under the Federal Safe Drinking Water Act (SDWA) and administered by the EPA and the DNR.

Each contaminant is on a different schedule for monitoring, or testing, based on regulatory guidelines. Milwaukee's public water supply is given a list each year of specific contaminants for which it must conduct monitoring during the next year. In 2000, DNR waived the requirement for Lead and Copper monitoring of residential sites for Milwaukee's public water supply, and granted a waiver in 2004.

However, in both of those years, as a responsible water utility, Milwaukee conducted limited lead testing at selected sites. In 2000, MWW retested homes with previous values greater than 15 parts per billion (ppb), and in 2004 tested homes and worked in collaboration with the Milwaukee Health Department and Milwaukee Public Schools in a study to test internal water systems at several schools.

We are proud of our efforts to reduce and control drinking water-related sources of lead in our community.



Linnwood Plant laboratory sampling

Also, under Water Engineering's design and oversight, the alum delivery station was relocated from inside the alum annex to the exterior wall adjacent to the alum annex. This involved relocating the three fill lines, air line, water hose bib, storage tank level indicators and posting new signs. This will allow alum deliveries to be safely received and not require the alum annex door to be open during the delivery.

In December, the Plant Automation Section initiated a new computerized maintenance management system (CMMS) for the Plants division. The new system will be used for preventive maintenance, demand maintenance, project planning and tracking, personnel inventory, personnel certification tracking, and can be used for key management.

The section also continued upgrading plant automation with the installation of a program that monitors all Supervisory Control and Data Acquisition (SCADA) system programmable logic controllers (PLC's) for proper operations and security. An energy monitoring software program was installed at the Riverside Pumping Station. The software is designed to show where significant energy savings can be realized.

In the summer, the Safety Specialist initiated a service contract with a vendor to twice yearly inspect and service all of the fire extinguishers for the North Point and Riverside Pumping Stations. Plant staff participated in fire extinguisher training.

Kilbourn Reservoir Takes on a New Role

In 2004, the Kilbourn Reservoir was decommissioned. It had been an integral part of Milwaukee's water distribution system for over 125 years. The reservoir was built in 1873 on land donated to the city by founding father Byron Kilbourn. Its purpose was to store and distribute water for drinking and fire protection. The structure is a seven-sided irregular shape that is 25 feet deep and, when full, holds 21 million gallons of water. The water was originally open to the air with about 3-1/2 acres of surface area. In 1979 a concrete roof was built over the reservoir to protect the water supply.

Water from the reservoir flowed as far south as the intersection of Oklahoma Avenue and South 20th Street. It was the Water Works' only in-ground distribution system reservoir. The structural integrity of the reservoir declined during its century of use, and to minimize leakage and structural stress, the reservoir was eventually used at only half its capacity. Replacement of the water storage component of the reservoir became necessary.

The Water Works, with the assistance of a landscape architect, held several town hall meetings since 2000 with residents of the Riverwest community and their elected representatives to develop a design for the reservoir and park area (on the north of East North Avenue) to meet the needs of the Water Works and enhance the property and the community's enjoyment of it.

The view of the city from the top of the reservoir is striking. In an effort to maintain that view, enhance the useable park area, and honor the original public works venture, a landscaping plan was developed which includes accessible paths to the top of the hill, a viewing area, and gently sloping terrain to the north.

A Department of Public Works project to reconstruct North Avenue between Booth and Bremen Streets will also be carried out. In this project, Garfield Avenue, similar to Lloyd Street, will terminate just east of Booth Street instead of going through to North Avenue. This will provide safer pedestrian crossing along North Avenue and increased parkland.

Milwaukee's Historic Preservation Commission named the Kilbourn Reservoir a historical site in 1999. In plans for the site, numerous features of historical significance will

Continued on page 17



Left, the existing reservoir aerial perspective



Right, the proposed reservoir aerial perspective

be preserved. The outline of the seven-sided shape will be preserved in pathways; stairs on the east, west, and south will remain, and the Kilbourn Star on the eastern slope will be represented. The Water Works pumping station, the comfort station in the park north of the reservoir, and the gatehouse atop the reservoir are also included in the new design. Above all, the spectacular views from the hill will remain and be open to public access. The garage building north of the pumping station, although not of historical significance, will also remain. The functions of the small police antenna atop the reservoir will be consolidated into a large red and white steel antenna already on the site.

In mid-2004, the reservoir was physically disconnected from the water distribution system. Work at the site of the existing reservoir and adjacent park area, and the reconstruction of North Avenue are planned for 2006.

The Milwaukee Water Works remains firm in its commitment to maintain strong communication with the community as we proceed with this project.

Howard Avenue Treatment Plant

In 2004, the Howard Avenue Treatment Plant pumped 12.7 billion gallons of treated water. This was significantly lower than the 18.8 billion gallons pumped in 2003. As mentioned earlier, the lower production was due to a three-month plant shutdown caused by a main break at the Texas Avenue Pumping Station. The failure of the “wye” (Y-shaped configuration of pipes) at the Texas station resulted in an inability to pump raw water to the Howard

Avenue Plant. Analysis of the failure found a defective weld was the major cause of the failure. The new wye included improvements in the design and fabrication of the butt strap joint. A concrete thrust block was also installed to encompass and support the wye. In addition, both 54” butterfly valves at the Texas station were placed in an open position. The surge relief valves were repaired and calibrated. The timing of pump valves opening and closing was checked.

During the plant shutdown the operations crews maintained functioning equipment and returned equipment to service. Maintenance personnel used the shutdown time to work on a backlog of maintenance and cleaning projects in the buildings and grounds and at booster stations. The new entrance security gate was placed in service, and a leak in the west clearwell was repaired.

Booster station projects from the Howard Avenue Plant completed in 2004 included refurbishing a pump at Menomonee Valley Pumping Station and decommissioning the Kilbourn Reservoir. Hydraulic modeling studies of the distribution system indicated changes in the operation of the Bluemound booster station were needed, and these operational changes were implemented.

Distribution

Water Distribution repairs and maintains the water distribution piping system throughout the City of Milwaukee and the retail suburbs of Greenfield, St. Francis, and Hales Corners to ensure continuous delivery of sufficient high quality water. Distribution employs quality repair practices using high quality parts and materials. Preventive maintenance systems have evolved into the core of distribution operations. Scheduled activities include repair and maintenance of facilities within every upcoming paving project area, annual flushing of dead end water mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program. Distribution has been progressive in researching and implementing new technologies in materials, repair parts and equipment as well as staying abreast of new developments in maintaining distribution systems to provide a quality conduit to deliver potable water.

Emergency repairs continue with an aging infrastructure. Distribution professionals conducted 10,289 investigations for various reasons such as reports of leaks in the street and concerns from our customers. The Water Distribution Supervisor on duty or on call assesses each emergency situation and determines the necessary action. Repair Crew employees



Howard Avenue Water Treatment Plant

responded to 873 call-outs for emergency, after-hours repair needs to maintain water service with the least amount of interruption as possible, and to maintain the integrity of the water distribution system.

In 2004, Distribution repaired 638 main breaks in addition to repairs to service laterals, hydrants, valves, and curbstops. Distribution coordinates new water main installation projects with various contractors to plan the water shut-off requirements, operate the necessary valves for the shut-off, coordinate water outages with affected customers, provide pipe cutting services with specialty saws for large diameter water mains, and return the water main to service.

Distribution works closely with the paving programs of the City of Milwaukee and suburban communities to coordinate preventive maintenance activities. The goal is to ensure that buried water infrastructure is in good operating condition prior to the road above being paved. Prior to paving, the water distribution system is reviewed in detail for possible improvements such as additional shut-off valves and the elimination of unused piping that, if left in service, could potentially cause future leaks. All valves are exercised and repaired or replaced as needed. Service lateral access boxes are located and inspected to make sure the curbstop is accessible and operable for any future shut-off needs. Leak surveys are conducted to detect any underground leaks. This preventive maintenance program has successfully reduced the incidence of disruption to new pavement for emergency repairs.



Distribution crew locating water main leak

Daniels Receives Wisconsin Water Association Award

The Wisconsin Water Association presented Laura Daniels, Water Distribution Manager for the Milwaukee Water Works, with the Leon A. Smith Award at its 83rd annual meeting in Appleton in September.

The award is presented for distinguished service to the WWA and for exceptional activity on behalf of the water industry.

2004 marked Daniels' twentieth year with MWW. She joined the utility in 1984 as a Safety Coordinator. Two years later, she moved to the Distribution Section and became manager in 1990. For the past three years, Daniels has chaired the WWA Distribution Committee, which provided seminars for more than 500 Wisconsin water professionals during that time.



Distribution Manager Laura Daniels is honored with the Leon A. Smith Award, presented by Wisconsin Water Association Past Chairman Mike Rau.

Leak detecting has taken on a greater focus as the water distribution system ages. Underground leaks can sometimes go undetected as water seeps into other underground voids. The use of a leak correlator provides a mechanism to detect these leaks that do not surface, helps identify repair activities, and reduces the need for future emergency repairs. The leak correlator uses highly sensitive microphones attached to valves or services. Data about the pipes is entered into the computer, the sound is analyzed, the location of the leak is pinpointed, and repairs are made.

The hydrant maintenance and inspection program is conducted by four Hydrant Service Workers. The Milwaukee Water Works maintains approximately 20,000 hydrants in the cities of Milwaukee, Greenfield, St. Francis, and the Village of Hales Corners. These employees inspect hydrants using portable, handheld computers to scan the bar code affixed to the hydrant and enter all related inspection data into that specific hydrant record. In addition, while flushing each hydrant during the inspection process, the water is sampled using a portable turbidimeter to ensure the Milwaukee Water Works water quality standards are met or exceeded throughout the distribution system. Any hydrant defects noted from the inspection are reported for repairs. If a hydrant is found to be inoperable, we notify the fire department about the out-of-service status as well as when the hydrant repair is complete. For further identification of hydrants, plastic rings were installed to provide fast identification of dead end main hydrants, hydrant out-of-service, restricted use hydrants, and private hydrants, which are not installed or maintained by the Milwaukee Water Works. We work closely with the fire departments of Milwaukee, Greenfield, Hales Corners, and St. Francis to ensure a well-communicated fire protection program.

Water Engineering

The Water Engineering Section functions as an in-house resource for the utility. The section is responsive to applied research needs of the utility and coordinates the Capital Improvements Program (CIP). The 2004 budget for CIP totaled \$14.62 million with \$12.62 million to replace water mains and \$2.0 million for water treatment process and facility improvements. The 2003 budget was \$14.9 million for CIP, \$11.6 million for water main replacement, and \$3.3 million for water treatment process and facility improvements. Capital improvement projects are specifically planned to increase efficiency and maintain the reliability of the entire Milwaukee Water Works system.

Outreach to Students

With the goal of increasing student interest in the drinking water field, the Milwaukee Water Works hosted a tour of the Linnwood Water Treatment Plant in October for a group of students and young professionals. Students on the field trip represented Marquette University, the Milwaukee School of Engineering, and the University of Wisconsin-Milwaukee. The Wisconsin Water Association organized a student chapter to provide networking, summer job opportunities and internships, scholarships, and field trips.

Milwaukee Area Technical College students in the Environmental Pollution Technology program serve as interns at the plants during the spring.

In 2004, Engineering Section staff continued to support the operation and maintenance of facilities by providing consulting engineering services for a number of projects. Construction of a soft water feed system for the addition of ammonia at the Linnwood Treatment Plant was completed in May. The project involving the abatement of lead paint at the Riverside Pumping Station resumed after a necessary delay. The security-driven, reconfigured entrance at the Howard Avenue Treatment Plant was put into operation in October.



Repairing the 84" water main at the Texas Avenue Pumping Station

Other projects related to the operational efficiency of both plants were completed, such as installing level sensors for the Linnwood Treatment Plant coagulation basins and clearwell, replacing an electric motor for a pump at Menomonee Valley Pumping Station, and the replacement of the surge relief valve at the Riverside Pumping Station. A hot water liquid oxygen (LOX) vaporizer system with new electrical units was placed in operation. In addition, engineering staff assisted in the implementation of the relocation of the alum unloading station, replacement of LOX piping insulation and replacement of the ozone sample water de-watering pumps.

Staff developed contract documents for several key projects in 2004. A contract to replace the Linnwood Plant filter effluent valve operators with new electro-hydraulic operators was awarded in August. A contract to replace the roof of the Meter Shop was completed prior to the end of the year. Contracts to refurbish a Texas Avenue raw water pump and electric motor, upgrade the power at Linnwood, and repair the Ozone Building Contactor roof, were awarded in December.

Water Engineering staff prepared plans and specifications for 0.8 miles of new water main extensions and 10.8 miles of replacement water mains. One hundred seventy-two plans were prepared for these installations within the City of Milwaukee. Plans were designed and reviewed for 17 alterations of water mains for various external projects. Plans were reviewed and approved for 10 suburban projects.

Early the morning of March 26, the Milwaukee Water Works responded to the failure of the 84" water main near the Texas Avenue intake feeding Lake Michigan water to the Howard Avenue Treatment Plant. MWW engineers, coordinating with the City Engineer's Construction Section, immediately began working on a plan to stabilize the area, evaluate the status of the station, repair the water main, and restore the soil and pavement to previous conditions.

After extensive analysis of the infrastructure, the water main was repaired and the station brought back in service on June 24.

2004 saw continuation of the strategic review and planning for the construction of the new Marquette Interchange Freeway and its impact on Milwaukee Water Works facilities. The first phase of work centered on West Clybourn Street and Tory Hill between North 10th Street and North 18th Street, and included eight water main plans constructed as part of the Wisconsin Department of Transportation contract. The much larger second phase, the

“North Leg,” included review of 14 water plans, again bid as part of the state contract. Water work includes six freeway crossings, three of which are feeder mains, as well as several relays and alterations in local roads adjacent to the freeway work. Construction of the North Leg water work was targeted for fall 2005 and will continue through much of 2006 in coordination with the freeway construction.

In addition, Milwaukee Water Works reviewed and constructed under city contract all necessary water alterations prior to the third interchange phase, the

“West Leg.” Alterations on the West Leg were related to hydrant locations adjacent to Interstate 94 between North 13th Street and North 25th Street. Preliminary review is also underway regarding impacts of the final interchange phase, the “Core.” The Core will include sections of Interstates 43 and 94 between West Wells Street and North 13th Street extending to the south of the existing High Rise Bridge. Water impacts anticipated for this final phase include a freeway crossing at West Wisconsin Avenue as well as several relays and alterations in adjacent local roads.

Staff also maintained and updated MWW distribution and transmission system maps and conducted daily updates within the customer service software. Information relating to location of water mains, valves, services, and hydrants are provided to this section and it is graphically represented on maps and data entered within a customer service database. The accuracy and integrity of these maps and data are essential to the day-to-day operations of the utility.

Permit applications for installation and alteration of the facilities of private utilities in public ways are reviewed for their impact on the water system. Permit applications for buildings are also reviewed. The staff reviewed over 1,000 permits in 2004.

Water Engineering provides flow and pressure information to plumbing contractors and fire protection companies. This information is used in the design of interior plumbing and sprinkler systems. As the distribution system changes, new flow tests are conducted to ensure accurate information is being supplied to fire protection companies. As of 2004, these requests are also taken via e-mail and fax. In 2004, the staff conducted 40 fire flow tests, of which 22 were done at the request of an outside agency. When these specific requests are made and performed, the outside agency covers all costs for the flow test. In order to provide quality control of pressure within the distribution system, Water Engineering installs and monitors remote pressure recorders at several locations during the warm weather months.

In 2004, Milwaukee Water Works obtained consultant services for completing a hydraulic model of the pumping and distribution system. The hydraulic model will primarily be used for long-range planning, validating the annual capital improvement program, improving operating standards, “what if” scenarios, and in the future, possibly water quality analysis.

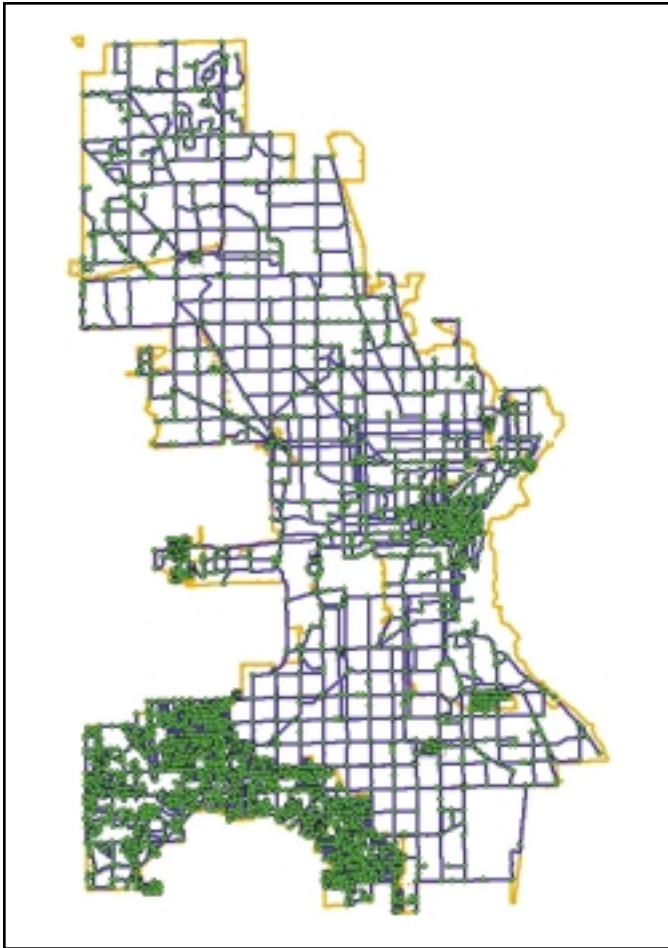
The benefits of a calibrated model have been desired for several years, however, the complexity of the MWW system required that an expert in hydraulic modeling be consulted



A fire hydrant flow test

to assist in further developing and completing the model. It is anticipated the project will result in a calibrated hydraulic model in late 2007 or early 2008.

Distribution material inspections assure that only materials meeting Milwaukee Water Works' high standards are installed in the distribution system. After being received by the Stores Division, all materials are visually inspected for compliance with city specifications. In many cases, these items are hydrostatically tested at design pressures. Water Engineering staff responded to 246 requests for inspection in 2004. The inspections were for various purchases delivered to MWW such as hydrants, valves, fittings, etc. The 246 requests translate to 22,225 pieces of materials. The staff also inspected fittings furnished by the contractor.



*A hydraulic model of the pumping and distribution system
will assist in long range planning.*

Milwaukee
Water Works

2004 Financial Report



KPMG LLP
777 East Wisconsin Avenue
Milwaukee, Wisconsin 53202-5337

Independent Auditors' Report

The Honorable Members of the Common Council of the City of Milwaukee:

We have audited the accompanying basic financial statements of the City of Milwaukee – Water Works (Water Works), an enterprise fund of the City of Milwaukee, Wisconsin, as of and for the year ended December 31, 2004 and 2003, as listed in the table of contents. These financial statements are the responsibility of the Water Works' management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Water Works internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in note 1, the financial statements present only the Water Works and do not purport to, and do not, present fairly the financial position of the City of Milwaukee, Wisconsin, as of December 31, 2004 and 2003, and the changes in its financial position for the years then ended in conformity with accounting principles generally accepted in the United States of America.

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the financial position of the City of Milwaukee – Water Works as of December 31, 2004 and 2003, and the changes in its financial position and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

The management's discussion and analysis on pages 26 through 32 is not a required part of the basic financial statements of the City of Milwaukee – Water Works, but is supplementary information required by accounting principles generally accepted in the United States of America. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

KPMG LLP

May 20, 2005

KPMG LLP, a U.S. limited liability partnership, is the U.S.
member firm of KPMG International, a Swiss cooperative.

City of Milwaukee – Water Works

Management Discussion and Analysis

December 31, 2004 and 2003

The management of the Milwaukee Water Works offers readers of this organization's financial statements this narrative overview and analysis of the Milwaukee Water Works' financial statements for the fiscal years ended December 31, 2004 and 2003. Readers are encouraged to consider the information presented here in conjunction with the financial information.

The mission of the Milwaukee Water Works is to provide safe, reliable and aesthetically pleasing drinking water to the City of Milwaukee and customers in suburban communities.

Financial Highlights

Year ended December 31, 2004

- Total revenues decreased by 3.26% in 2004, from \$74.5 million in 2003 to \$72.1 million in 2004.
- Total expenses decreased by \$2.5 million to \$54 million or 4.46% in 2004. The 2003 expenses were \$56.5 million.
- As of December 31, 2004 the Water Works outstanding debt consisted of \$13.7 million in revenue bonds through the State of Wisconsin Safe Drinking Water Loan Program and \$33.2 million in general obligation bonds for a total of \$46.9 million. As of December 31, 2003, total debt amounted to \$52.7 million, with \$14.5 million in revenue bonds and \$38.2 million in general obligation bonds.
- The Milwaukee Water Works is an enterprise fund within the primary government of the City of Milwaukee and as such is not subject to property taxes. In place of property taxes, the Milwaukee Water Works contributes to the City's tax levy by making a payment in lieu of taxes (PILOT). This amounted to \$7.9 million in 2004 and \$7.7 million in 2003 and is reported in the accompanying statement of revenues, expenses, and changes in net assets as operating transfers out.

Year ended December 31, 2003

- Total revenues in 2003 stayed relatively the same as the revenues in 2002 with only a (.27%) decrease from \$74.7 million to \$74.5 million.
- Total expenses increased by \$3.7 to \$56.5 million or 7% in 2003. The 2002 expenses were \$52.8 million.
- As of December 31, 2003 the Water Works outstanding debt consisted of \$14.5 million in revenue bonds through the State of Wisconsin Safe Drinking Water Loan Program and \$38.2 million in general obligation bonds for a total of \$52.7 million. As of December 31, 2002, total debt amounted to \$58.1 million, with \$15.3 million in revenue bonds and \$42.8 million in general obligation bonds.
- The Milwaukee Water Works is an enterprise fund within the primary government of the City of Milwaukee and as such is not subject to property taxes. In place of property taxes, the Milwaukee Water Works contributes to the City's tax levy by making a payment in lieu of taxes (PILOT). This amounted to \$7.7 million in 2003 and \$8.0 million in 2002.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the basic statements of the Milwaukee Water Works. The Milwaukee Water Works basic financial statements are comprised of two components: 1) the financial statements and 2) notes to the financial statements which explain in more detail some of the information in the statements.

Required Financial Statements

The financial statements of the Water Works report information about the Water Works using accounting methods similar to those used by private-sector companies. These statements provide both long-term and short-term information about the Water Works' overall financial status.

The statement of net assets presents information on all of the Water Works' assets and liabilities, with the difference between the two reported as net assets. This statement provides information about the nature and the amounts of investments in resources (assets) and the obligations to Water Works creditors (liabilities). It provides one way to measure the financial health of the Water Works by providing the basis for evaluating the capital structure of the Water Works and assessing the liquidity and financial flexibility of the Water Works. However, one will need to consider other non-financial factors such as changes in economic conditions, population and industrial/commercial customer growth, and new or changed government legislation.

All of the current year's revenues and expenses are accounted for in the statement of revenues, expenses, and changes in net assets. This statement measures the Water Works' results of operations over the past year and can be used to determine whether the Water Works has successfully recovered all its costs through its user fees and other charges.

The final required financial statement is the statement of cash flows. The statement reports cash receipts, cash payments, and net changes in cash resulting from operations, financing and investing, activities. This statement identifies sources and uses of cash as well as the change in the cash balance during the reporting period.

Financial Analysis of the Water Works

Statement of Net Assets — A summary of assets, liabilities, and net assets as of December 31, 2004, 2003, and 2002 is as follows:

Table A-1 Condensed Summary of Net Assets

	2004	2003	2002
Assets			
Total Current Assets	\$60,975,985	\$57,850,903	\$51,494,128
Net Capital Assets	359,121,526	352,031,865	349,961,312
Total Assets	420,097,511	409,882,768	401,455,440
Total Current Liabilities	15,907,702	12,289,042	10,406,276
Total Non current Liabilities	41,298,818	46,921,651	52,635,597
Total Liabilities	57,206,520	59,210,693	63,041,873
Net Assets			
Invested in Capital Assets, net of related debt	312,147,014	299,299,247	291,862,961
Restricted for Debt Service	609,999	599,399	589,071
Unrestricted Net Assets	50,133,978	50,773,428	45,961,535
Total Net Assets	\$362,890,991	\$350,672,074	\$338,413,567

Net assets may, over time, serve as a useful indicator of an entity’s financial position. In the case of the Milwaukee Water Works, assets exceeded liabilities by \$362,890,991 and \$350,672,074 at December 31, 2004 and 2003 respectively.

In Table A-1, it can be seen that the largest portion of the Water Works’ net assets (86% and 85% as of December 31, 2004 and 2003, respectively) reflects its investment in capital assets (e.g., water mains, buildings, machinery and equipment) net of related debt. Also, as shown in Table A-3, the Water Works’ water main system makes up approximately 53% of the capital assets as of December 31, 2004 and 2003. The Milwaukee Water Works uses these capital assets to provide safe reliable and aesthetically pleasing drinking water to its 833,000-customer base that lives in the City of Milwaukee and surrounding communities.

The Milwaukee Water Works investment in capital assets is reported net of related debt. The resources to repay this debt must be provided from operating and non-operating activities as the capital assets themselves are not intended to be used to liquidate these liabilities.

The remaining 14% of net assets are unrestricted and represent current assets (e.g., cash on hand for operation, cash held in the local government investment pool, accounts receivable and inventory and materials).

As can be seen in Table A-1 capital assets net of related debt increased by \$12.8 and \$7.4 million during the years ended December 31, 2004 and 2003, respectively. This increase in capital assets net of related debt was mainly due to a combination of reduction in related debt service and increase in completion and capitalization of capital projects in 2004. The increases in net capital assets were \$7.1 million and \$2.1 million for 2004 and 2003, respectively. There was no significant change in contributed capital. The amounts of contributed capital were \$ 2,092,276 and \$2,053,370 for 2004 and 2003, respectively.

Statement of Revenues, Expenses, and Changes in Net Assets — While the summary of net assets (Table A-1) shows the amount of net assets, the statement of revenues, expenses and changes in net assets (Table A-2) provides answers as to the nature and source of the changes.

Table A-2 Condensed Summary of Revenues, Expenses and Changes in Net Assets

	2004	2003	2002
Operating Revenue	\$71,068,443	\$73,814,123	\$73,859,577
Non-Operating Revenue	987,669	668,742	826,136
Total Revenues	72,056,112	74,482,865	74,685,713
Depreciation Expense	11,726,310	11,928,616	12,027,348
Other Operating Expenses	39,984,555	42,072,263	37,948,141
Non-Operating Expenses	2,318,959	2,552,893	2,845,506
Total Expenses	54,029,824	56,553,772	52,820,995
Income before Capital Contributions & Transfers	18,026,288	17,929,093	21,864,718
Capital Contributions	2,092,276	2,053,370	356,174
Transfers In			7,395,084
Transfers Out	(7,899,647)	(7,723,956)	(7,974,459)
Changes in Net Assets	12,218,917	12,258,507	21,641,517
Beginning Net Assets	350,672,074	338,413,567	316,772,050
Ending Net Assets	362,890,991	350,672,074	338,413,567

Year ended December 31, 2004

A review of Table A-2 shows that operating revenues decreased by \$2.7 million or 3.7% and total expenses also decreased by \$2.5 million or 4.5%. Factors behind these results include:

Revenues:

- 2004 water revenues and water consumption have both gone down from the previous year. Operating revenues decreased by \$2.7 million and the gallons sold decreased by 2.1 billion gallons. The 2004 decrease in gallons sold represents the largest decrease in the last five years, or over five times the decrease in 2003. In 2003, the gallons sold decreased by 479 million gallons. This is, in part, explained by the cool summer Milwaukee experienced in 2004.
- Unbilled accounts receivables were \$9,584,695 and \$9,882,043 for 2004 and 2003 respectively, with a decrease of only \$297,348. The year-to-year level of accrued revenue due to unbilled accounts receivable stayed in the same range.

Expenses:

The \$2.5 million decrease in expenses is attributed to the following:

- Operating expenses, excluding depreciation, decreased by \$2.1 million or 5% in 2004. The major portion of this decrease was due to a large decrease in transmission and distribution expenses. Transmission and distribution expenses decreased by \$3.0 million. The major causes of this decrease were as follows:
 - ◆ A major project was underway in 2003 that involved painting and maintaining of the Hawley Road tank. The cost of that project was reflected in 2003 expenditures whereas in 2004 there was no similar project in this category.
 - ◆ There were 638 water main breaks in 2004, compared to 851 in 2003, which resulted in lower transmission and distribution expenses for 2004. Early in 2003, MWW experienced a large number of water main breaks. This surge in the level of main breaks caused an unusual increase in overtime pay and an increase in salaries & wages expenses.
- Non-operating expense, which is mainly interest expense, decreased in 2004 by \$233,933. In 2003, there was a decrease of \$292,613. These were basically due to declining principal balances.

Year ended December 31, 2003

A review of Table A-2 shows that operating revenues decreased \$45,454 or (.1%) and total expenses increased by \$3.7 million or 7.1%. These results may be explained as follows:

Revenues:

- 2003 water revenues and water consumption were almost unchanged from the previous year. Operating revenues decreased by \$45,454 and the gallons sold decreased by 479.0 million gallons.
- Unbilled accounts receivables were \$9,882,043 and \$9,668,731 for 2003 and 2002 respectively, with an increase of only \$213,312. In 2002, a new method of calculating unbilled accounts receivable was developed, through the billing system, which utilized actual billing information. This methodology resulted in a more accurate accrued revenue amount. This new calculation of unbilled accounts receivable required an adjustment of \$3.4 million for 2002. The same method of calculating unbilled accounts receivable was used in 2003 and the year-to-year level of unbilled accounts receivable stayed in the same range.

Expenses:

The \$3.7 million increase in expenses is attributed to the following:

- Other operating expenses increased by \$4.1 million or 10.9% in 2003. The major portion of this increase was due to transmission and distribution expenses, which increased by \$2.9 million. The major causes of this increase were as follows:
 - ◆ A major project was started in 2003 that involved painting and maintaining the Hawley Road tank. The cost of this project was the largest factor in the increase in expenditures for 2003. There was no similar project in 2002.
 - ◆ The water system is getting older which increased expenditures to maintain the system. Additionally, the water system pressure level was increased in 2003. This pressure increase caused more water mains to fail and required more maintenance expenditures.
 - ◆ In January and February 2003, the Utility experienced 432 water main breaks, the highest number in this period in over ten years. This was attributed to frost penetrating deep into the ground due to cold temperatures and a lack of insulating snow cover on the ground. Labor and material costs were higher than normal to repair these breaks.
 - ◆ In 2003, the 6-month management pay freeze in effect for 2002, was lifted and a cost of living adjustment was paid to management employees.
- Non-operating expense, which is mainly interest expense, decreased in 2003 by \$292,613. In 2002, there was a decrease of \$161,000. These were due to lower interest rates on borrowed money.

Capital Assets and Debt Administration**Capital Assets:**

The Milwaukee Water Works calculates depreciation based on composite groups of assets within a given category and the average useful life. These categories are building & improvements, machinery & equipment and transmission and distribution systems. Each group's depreciation is then calculated using a rate authorized by the latest PSC rate order.

As of December 31, 2004, the Milwaukee Water Works investment in capital assets amounted to \$359,121,526 (net of accumulated depreciation). This is an increase of \$7,089,660 from year 2003. The increase is explained, mainly, by a \$6.9 million increase in net investment in transmission and distribution system assets. In 2004, a large number of projects were completed and capitalized.

As of December 31, 2003, the Milwaukee Water Works investment in capital assets amounted to \$352,031,865 (net of accumulated depreciation). This is an increase of \$2,070,553 from year 2002. The increase is explained, in part, by an increase in capital contributions to \$2,053,370. Additionally, depreciation rates were changed in 2002. These new rates were in effect for the entire 2003. The effect of the new rates in 2002 was only for the last seven months of the year. This change was authorized by Public Service Commission ("PSC") rate order 3720-WR-104 (effective June 1, 2002).

Table A-3 Capital Assets

	2004	2003	2002
Capital Assets:			
Land	\$1,567,911	1,567,911	1,585,341
Buildings	22,986,740	22,361,767	22,430,386
Transmission and Distribution System	275,708,732	266,638,590	261,642,851
Machinery & Equipment	195,798,480	192,358,519	188,695,880
Construction in Progress	20,250,713	16,439,912	12,210,172
Nonutility Property	540,299	540,299	540,299
Total Capital Assets	516,852,875	499,906,998	487,104,929
Less			
Accumulated Depreciation	(157,731,349)	(147,875,132)	(137,143,617)
Net Capital Assets	\$359,121,526	352,031,866	349,961,312

Investment Administration

As an Enterprise Fund within the primary government of the City of Milwaukee, the Milwaukee Water Works does not have a direct investment plan. As such, cash not in use for day-to-day operation is invested through the City of Milwaukee in the State of Wisconsin's Local Government Investment Pool (LGIP) and/or other types of investment instruments as determined by the City Treasurer. As of December 31, 2004 and 2003, the City Treasurer had invested \$24.4 million and \$15.0 million of Water Works' funds respectively in certificates of deposit.

Debt Administration

Debt service is administered by the Public Debt Commission and can only be initiated through Council resolution with approval from the Commissioner of Public Works (or his designee, the Superintendent of Water Works).

The Water Works continues to make its regularly scheduled payments on its bonds. All bond debt covenants have been met.

As of December 31, 2004, and 2003, the Water Works debt consisted of \$13.7 and \$14.5 million respectively, in revenue bonds through the State of Wisconsin Safe Drinking Water Loan program and \$33.2 and \$38.2 million respectively, in general obligation bonds for a total indebtedness of \$46.9 and 52.7 million for 2004 and 2003 respectively.

Economic Factors

There was no rate change in 2004 or 2003, nor there is any pending rate change request initiated in 2004 for subsequent years.

The loss in recent years of customers in "wet industries" (breweries, leather tanneries, food processors, etc.) coupled with water conservation measures have resulted in a steady decline in water volume sold, as shown in Table A-4. Over the last five years, the volume of water sold has dropped by 10.5 %.

In an effort to increase water sales outside of residential customers, the Water Works filled a position of Marketing Specialist in late 2003. Among other things, this position is charged with attracting new commercial clients or developers that would utilize our water resources.

Accordingly, in 2004, Milwaukee Water Works developed new marketing materials. In addition, a multi-agency marketing group was initiated to target water-intensive business and industry in business attraction and retention efforts.

Table A-4 Sale of Water (1000 gallons)

Customer Class	2004	2003	2002	2001	2000
Residential	12.7	13.5	13.7	13.7	13.5
Commercial	8.3	8.5	8.7	9.2	9.8
Industrial	6.2	6.6	7.0	7.6	8.4
Public Authority	2.4	2.6	2.6	2.4	2.1
Subtotal	29.6	31.2	32.0	32.9	33.8
Wholesale	7.7	8.2	7.9	7.9	7.8
Total	37.3	39.4	39.9	40.8	41.6

The Water Works is seeking to increase revenue and broaden the rate base by adding major new customers. A water service agreement was negotiated with the City of New Berlin and was approved by the Milwaukee Common Council in 2003. Accordingly, construction of facilities is underway to deliver and receive water respectively. There was no water sales effect of this agreement in 2004.

The Public Service Commission of Wisconsin (PSC) recently issued an order directing an accounting change for Contributions in Aid of Construction (CIAC) for all municipally owned utilities. The effective date of the order was January 1, 2003 and had been implemented. This PSC order disallows depreciation on contributed assets as an operating cost for future rate petitions.

Contacting Milwaukee Water Works Financial Management

This financial report is designed to provide a general overview of the Milwaukee Water Works’ finances to our customers, creditors and any one who has an interest in the Water Works’ operations. If you have questions about this report or need additional information, contact Milwaukee Water Works, Superintendent, Carrie Lewis, 841 N. Broadway, Room 401, Milwaukee, Wisconsin 53202.

City of Milwaukee – Water Works
Statements of Net Assets
December 31, 2004 and 2003

Assets	2004	2003
Current Assets		
Cash and Cash Equivalents	\$5,225,176	11,331,790
Restricted Cash and Cash Equivalents	609,999	599,399
Investments	24,360,525	15,000,000
Accounts Receivable (Net)	10,149,380	10,778,871
Unbilled Accounts Receivable	9,584,695	9,882,043
Accrued Interest	69,732	31,586
Due from Other Funds	8,029,835	7,456,077
Inventory of Materials and Supplies	2,596,955	2,585,119
Prepaid Items	13,380	9,679
Other Assets	336,308	176,339
Total Current Assets	60,975,985	57,850,903
Non Current Assets		
Water Plant in Service (Net)	338,457,773	335,176,936
Construction Work In Process	20,250,713	16,439,912
Other Property (Net)	413,040	415,017
Total Non Current Assets	359,121,526	352,031,865
Total Assets	420,097,511	409,882,768
Current Liabilities		
Accounts Payable	4,629,866	2,305,753
Interest Payable	449,018	415,463
Accrued Wages	1,012,005	1,103,653
Compensated Absences	943,396	920,833
Due to Other Funds	3,197,724	1,732,373
Long-term Debt Due Within One Year	5,675,693	5,810,967
Total Current Liabilities	15,907,702	12,289,042
Non Current Liabilities		
General Obligation Bonds Payable	28,377,799	33,176,352
Revenue Bonds Payable	12,921,019	13,745,299
Total Noncurrent Liabilities	41,298,818	46,921,651
Total Liabilities	57,206,520	59,210,693
Net Assets		
Invested in Capital Assets, net of related debt	312,147,014	299,299,247
Restricted for Debt Service	609,999	599,399
Unrestricted	50,133,978	50,773,428
Total Net Assets	\$362,890,991	350,672,074

The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works
Statements of Revenues, Expenses and Changes
in Fund Net Assets
For the Years Ending December 31, 2004 and 2003

	2004	2003
Operating Revenues		
Water Sales	\$57,913,722	60,342,384
Fire Protection Service	5,896,555	5,846,679
Charges for Shared Services	5,808,606	5,677,500
Other	1,449,560	1,947,560
Total Operating Revenues	71,068,443	73,814,123
Operating Expenses		
Administrative and General	4,919,532	4,484,117
Billing and Collection	2,232,788	2,194,616
Transmission and Distribution	16,701,551	19,722,717
Water Pumping	6,133,526	5,763,753
Water Treatment	9,997,158	9,907,060
Depreciation	11,726,310	11,928,616
Total Operating Expenses	51,710,865	54,000,879
Operating Income	19,357,578	19,813,244
Non-operating Revenues (Expenses)		
Interest Income	477,371	346,623
Interest Expense	(2,318,959)	(2,552,893)
Miscellaneous	510,298	322,119
Income Before Capital Contributions and Transfers	18,026,288	17,929,093
Capital Contributions	2,092,276	2,053,370
Transfers Out	(7,899,647)	(7,723,956)
Increase in Net Assets	12,218,917	12,258,507
Net Assets Beginning of Period	350,672,074	338,413,567
Net Assets End of Period	\$362,890,991	350,672,074

The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works
Statements of Cash Flows
For the Years Ended December 31, 2004 and 2003

	2004	2003
Cash Flows from Operating Activities		
Receipts from customers and users	\$72,178,295	73,646,542
Cash receipts from other funds	891,592	3,655,931
Payments to suppliers	(13,070,879)	(16,069,911)
Payments to employees	(21,630,110)	(20,970,096)
Payments to other funds	(3,387,055)	(4,150,127)
Net Cash Provided by Operating Activities	34,981,843	36,112,339
Cash Flows from Noncapital Financing Activities		
Miscellaneous Non-Operating Revenue	510,298	322,118
Transfer to other funds	(7,899,647)	(7,723,956)
Net Cash Used in Noncapital Financing Activities	(7,389,349)	(7,401,838)
Cash Flows from Capital and Related Financing Activities		
Acquisition of property, plant and equipment	(16,723,697)	(11,945,797)
Retirement of bonds, notes and revenue bonds	(5,810,967)	(5,462,753)
Interest paid	(2,232,544)	(2,363,120)
Net Cash Used in Capital and Related Financing Activities	(24,767,208)	(19,771,670)
Cash Flows from Investing Activities		
Purchase of Investments	(9,360,525)	(15,000,000)
Interest income	439,225	350,186
Net Cash Provided by (used in) Investing Activities	(8,921,300)	(14,649,814)
 Net Increase in Cash and Cash Equivalents	 (6,096,014)	 (5,710,983)
Cash and Cash Equivalents - Beginning	11,931,189	17,642,172
Cash and Cash Equivalents - Ending	\$5,835,175	11,931,189

The accompanying Notes to Financial Statements are an integral part of these statements.

Continued

City of Milwaukee – Water Works
Statements of Cash Flows
For the Years Ended December 31, 2004 and 2003

	2004	2003
Cash and Cash Equivalents at Year End Consist of:		
Unrestricted Cash and Cash Equivalents	\$5,225,176	11,331,790
Restricted Cash and Cash Equivalents	609,999	599,399
Total Cash and Cash Equivalents	<u>\$5,835,175</u>	<u>11,931,189</u>

**Reconciliation of Operating Income to Net Cash
Provided by Operating Activities**

Operating income	\$19,357,579	19,813,244
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	11,726,310	11,928,615
Changes in assets and liabilities:		
Receivables	926,839	(334,031)
Due from other funds	891,593	3,642,688
Inventories	(11,836)	(322,446)
Prepaid items	(3,701)	(9,679)
Deferred Charges	—	13,243
Other assets	(159,969)	122,329
Accounts Payable	2,324,113	1,511,348
Accrued liabilities	<u>(69,085)</u>	<u>(252,972)</u>
Net cash provided by operating activities	\$34,981,843	36,112,339

Non-cash Activities:

During the year, water mains and related property, installed by others were deeded to the Water Works in the amount of	\$2,092,276	2,053,370
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The accompanying Notes to Financial Statements are an integral part of these statements.

City of Milwaukee – Water Works

Notes to Financial Statements

December 31, 2004 and 2003

1. Summary of Significant Accounting Policies

The City of Milwaukee Water Works (“Water Works”) is an enterprise fund within the primary government of the City of Milwaukee (the “City”). The Water Works provides water to residents and commercial enterprises in the metropolitan Milwaukee area. The financial statements of the Water Works have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP), as prescribed by the Governmental Accounting Standards Board (GASB) modified for certain requirements of the Public Service Commission of Wisconsin (“PSC”). The PSC regulates rates charged to customers and other practices of the Water Works. To facilitate the understanding of data included in the financial statements, summarized below are the significant accounting policies.

Reporting Entity — As defined by accounting principles generally accepted in the United States of America, the financial reporting entity consists of a primary government as well as its component units, which are legally separate organizations for which the elected officials of the primary government are financially accountable. Financial accountability is defined as:

- (1) Appointment of a voting majority of the component unit’s board and either
 - (a) the ability to impose will by the primary government or
 - (b) the possibility that the component unit will provide a financial benefit to or impose a financial burden on the primary government, or
- (2) Fiscal dependency on the primary government.

Based on the GASB criteria, the Water Works has no component units and is not a component unit of any other entity. However, because the Water Works is not legally separate from the City, it is included in the financial statements of the City as an enterprise fund.

Basis of Accounting—The accompanying financial statements were prepared on the accrual basis of accounting. Revenues from operations, investments, and other sources are recorded when earned. Expenses (including depreciation and amortization) of providing services to the public are accrued when incurred. Under the accrual basis of accounting, revenues are recognized in the accounting period in which they are earned and expenses are recognized in the period they are incurred.

Non-exchange transactions, in which the Water Works receives value without directly giving equal value in return, include contributions and grants. On an accrual basis, revenue from contributions and grants is recognized in the fiscal year in which all eligibility requirements have been satisfied. Eligibility requirements include timing requirements and expenditure requirements. Timing requirements specify the year when the resources are required to be used or the fiscal year when use is first permitted. Expenditure requirements specify the year in which the resources are provided to the Waterworks on a reimbursement basis.

Pursuant to GASB Statement No. 20, *Accounting and Financial Reporting for Proprietary Funds and Other Governmental Entities that Use Proprietary Fund Accounting*, private-sector standards of accounting and financial reporting issued prior to December 1, 1989, generally are followed to the extent that those standards do not conflict with or contradict guidance of the Governmental Accounting Standards Board. The Water Works also has the option of following subsequent private-sector guidance, subject to this same limitation. The Water Works has elected not to follow subsequent private-sector guidance.

Cash equivalents—Cash equivalents represent all highly liquid investments purchased with original maturities of ninety days or less are stated at cost or amortized cost, which approximates fair value, and are invested with the City Treasurer.

Accounts Receivable—Accounts receivables is composed of charges to customers for water services and receivables for sundry bill charges that cannot be attached to the property. The year-end balance includes actual unpaid charges and a year-end estimate of the 2004 receivables that will be billed in the first quarter of 2005.

Inventory of Materials and Supplies—Inventories of materials and supplies are stated at moving average cost or lower of cost or market, based upon perpetual record keeping systems and periodic cycle counts of quantities on hand.

Capital Assets—Capital assets are defined by the Water Works as assets with an initial, individual cost of more than \$2,000 and an estimated useful life in excess of a year. Capital assets are capitalized at cost when purchased or constructed. Donated capital assets are recorded at their estimated fair value at the date of donation. Costs of depreciable property retired are removed from utility plant accounts and are charged to accumulated depreciation. Maintenance and repair costs are charged to operations as incurred and renewals and improvements are added to the asset accounts. Depreciation is provided over the estimated useful lives using the straight-line method. The estimated useful lives are as follows:

Building and Improvements	45–58
Transmission and Distribution Systems	64–110
Machinery and Equipment	6–56

Bond Premiums, Discounts, and Issuance Costs—Bond premiums and discounts, as well as issuance costs are deferred and amortized over the life of the bonds using the effective interest method. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are reported as deferred charges and amortized over the term of the related debt.

Net Assets—Equity is displayed in three components as follows:

Invested in Capital Assets, Net of Related Debt—This consists of capital assets, net of accumulated depreciation, less the outstanding balances of any bonds, mortgages, notes, or other borrowings that are attributable to the acquisition, construction, or improvement of those assets.

Restricted—This consists of net assets that are legally restricted by outside parties or by law through constitutional provisions or enabling legislation. When both restricted and unrestricted resources are available for use, generally, it is the Water Work’s policy to use restricted resources first, and then unrestricted resources when they are needed. The Water Works has restricted net assets of \$609,999 and \$599,399 at December 31, 2004 and 2003 respectively. This restriction is related to debt service requirements of the revenue bonds.

Unrestricted—This consists of net assets that do not meet the definition of “restricted” or “invested in capital assets, net of related debt”.

Vacation Benefits—Vacation benefits are recorded as expenses over the periods the benefits accrue to the employees.

Sick Leave—Sick leave is recorded as an expense when paid since accumulated sick leave is forfeited upon termination. Upon retirement, employees are generally entitled to payment of accumulated sick leave up to a maximum of 30 days. At December 31, 2004 and 2003, accumulated sick leave earned but not taken was approximately \$4,667,878 and \$4,552,570 respectively. Accumulated sick leave is determined on the basis of current salary rate. The amount of accumulated sick leave to be forfeited upon termination and retirement is not available and would reduce this amount. Payments for sick leave to retirees were immaterial to the financial statements for the years 2004 and 2003.

Revenues—Revenues are recognized when water services are rendered. Unbilled water services are accrued as receivables and revenues at year-end. The Water Works has classified its revenues as either operating or nonoperating. Operating Revenue includes activities that have the characteristics of exchange transactions including sales of water supplied to city, suburban and commercial users. Non-operating revenue includes activities that have the characteristics of non-exchange transactions, such as contributions and most Federal, State, and local grants and contracts.

Taxes—Payments in lieu of property taxes are recognized as a transfer in the year billed by the City.

Estimates—The preparation of financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Estimates also affect the reported amounts of revenues and expenses during the reporting period. A significant estimate included herein is the allowance for doubtful accounts receivable. Actual results could differ from this estimate.

New Accounting Pronouncements—In March 2003, the Governmental Accounting Standards Board (GASB) issued Statement No. 40, *Deposit and Investment Risk Disclosures – an amendment of GASB Statement No. 3*. This statement will revise the deposit and investment risks disclosed in the notes to the financial statements. The City will implement Statement No. 40 beginning with the year ended December 31, 2005.

2. Deposits and Investments

At December 31, 2004 and 2003, the reported amount of the Water Works' deposits and cash on hand were \$24,984,842 and \$15,535,945 respectively. The related bank balances of deposits for accounts maintained by the City Treasurer at December 31, 2004 and 2003 amounted to \$617,962 and \$521,717 respectively. Bank balances at December 31, 2004 and 2003 are insured up to \$500,000 at each banking institution. However, Water Works accounts are in the name of the City of Milwaukee; therefore, insurance is applied to the aggregate total of all City bank account balances.

Milwaukee Water Works — as of December 31 Deposits and Investments		
Description	2004	2003
Local Government Investment Pool	\$5,210,858	11,395,244
Deposits and Cash on Hand	624,317	535,945
Certificate of Deposit	24,360,525	15,000,000
Total	\$30,195,700	26,931,189

Pooled Investments:

Investments are reported at fair value. Fair value is the amount at which an investment could be exchanged in a current transaction between willing parties, other than in a forced sale. Water Works utilizes the State of Wisconsin Local Government Investment Pool (LGIP) to maintain short-term investments. The Office of the State Treasurer administers the LGIP. The funds in this pool are managed by the State of Wisconsin Investment Board and are kept in diversified and low-risk investments. The fund is invested primarily in obligations of the U.S. Government and its agencies, and high quality commercial bank and corporate debt obligations.

3. Capital Assets

Capital asset activity for the year ended December 31, 2004 was as follows:

	Balance January 1, 2004	Additions	Deletions	Balance December 31, 2004
Capital assets not being depreciated:				
Land and land improvements	\$1,567,911	—	—	1,567,911
Construction in progress	16,439,912	18,617,898	(14,807,097)	20,250,713
Total capital assets not being depreciated	18,007,823	18,617,898	(14,807,097)	21,818,624
Capital assets being depreciated:				
Buildings	22,361,767	624,973	—	22,986,740
Transmission and distribution system	266,638,590	9,568,933	(498,791)	275,708,732
Machinery and equipment	192,358,519	4,613,191	(1,173,230)	195,798,480
Non Utility Property	540,299	—	—	540,299
Total capital assets being depreciated	481,899,175	14,807,097	(1,672,021)	495,034,251
Less: accumulated depreciation:				
Buildings	12,884,846	712,402	—	13,597,248
Transmission and distribution system	66,772,537	3,198,542	(695,736)	69,275,343
Machinery and equipment	68,092,467	7,815,366	(1,176,334)	74,731,499
Non Utility Property	125,282	1,977	—	127,259
Total accumulated depreciation	147,875,132	11,728,287	(1,872,070)	157,731,349
Total capital assets, being depreciated, net	334,024,043	3,078,810	200,049	337,302,902
Total capital assets, net	\$352,031,866	21,696,708	(14,607,048)	359,121,526

Capital asset activity for the year ended December 31, 2003 was as follows:

	Balance January 1, 2003	Additions	Deletions	Balance December 31, 2003
Capital assets not being depreciated:				
Land and land improvements	\$1,585,341	—	(17,430)	1,567,911
Construction in progress	12,210,172	14,117,082	(9,887,342)	16,439,912
Total capital assets not being depreciated	13,795,513	14,117,082	(9,904,772)	18,007,823
Capital assets being depreciated:				
Buildings	22,430,386	—	(68,619)	22,361,767
Transmission and distribution system	261,642,851	5,543,026	(547,287)	266,638,590
Machinery and equipment	188,695,880	4,344,316	(681,677)	192,358,519
Non Utility Property	540,299	—	—	540,299
Total capital assets being depreciated	473,309,416	9,887,342	(1,297,583)	481,899,175
Less: accumulated depreciation:				
Buildings	12,250,048	703,417	(68,619)	12,884,846
Transmission and distribution system	64,192,592	3,120,817	(540,872)	66,772,537
Machinery and equipment	60,577,672	8,104,382	(589,587)	68,092,467
Non Utility Property	123,305	1,977	—	125,282
Total accumulated depreciation	137,143,617	11,930,593	(1,199,078)	147,875,132
Total capital assets, being depreciated, net	336,165,799	(2,043,251)	(98,505)	334,024,043
Total capital assets, net	\$349,961,312	12,073,831	(10,003,277)	352,031,866

4. Long Term Obligations

A. Changes in Long Term Obligations

Changes in long-term obligations for the year ended December 31, 2004 were as follows:

	Balance January 1, 2004	Additions	Deletions	Balance Dec. 31, 2004	Due Within One Year
General obligation bonds	\$37,808,589	—	(5,007,888)	32,800,701	4,851,413
Deferred amount on refundings	(1,391,402)	—	272,647	(1,118,755)	—
Unamortized premiums	1,767,053	—	(219,787)	1,547,266	—
Revenue bonds	14,548,378	—	(803,079)	13,745,299	824,280
Total	\$52,732,618	—	(5,758,107)	46,974,511	5,675,693

Changes in long-term obligations for the year ended December 31, 2003 were as follows:

	Balance January 1, 2003	Additions	Deletions	Balance Dec. 31, 2003	Due Within One Year
General obligation bonds	\$42,488,920	—	(4,680,331)	37,808,589	5,007,888
Deferred amount on refundings	(1,716,520)	—	325,118	(1,391,402)	—
Unamortized premiums	1,995,150	—	(228,097)	1,767,053	—
Revenue bonds	15,330,801	—	(782,423)	14,548,378	803,079
Total	\$58,098,351	—	(5,365,733)	52,732,618	5,810,967

B. General Obligation Bonds

The City issues general obligation bonds to provide funds for the acquisition and construction of the water plant and related equipment. General obligation bonds are secured by the full faith and unlimited taxing power of the City. The bonds for the Water Works will be retired by revenues from water services or, if the revenues are not sufficient, by future tax levies. The original amount of general obligation bonds issued in prior years was \$95,004,263. There were no general obligation bonds issued during the year ended December 31, 2004 or 2003. General obligation bonds outstanding at December 31, 2004 and 2003 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2004	Principal Balance at Dec. 31, 2003
C Refunded	2003 to 2004	4.90%	\$5,000,000	—	—
D Refunded	2003 to 2006	5.00%	11,000,000	—	—
Refunding C&D	2003 to 2015	5.83%	4,851,248	3,252,703	3,731,334
E Refunded	2003 to 2006	5.49%	9,000,000	1,199,600	1,799,400
F	2003 to 2011	4.97%	13,100,000	1,746,944	2,620,416
G	2003 to 2012	4.93%	4,212,000	843,103	1,124,224
J	2003 to 2012	4.78%	8,718,000	1,741,365	2,321,820
K	2003 to 2013	4.64%	18,044,000	4,809,360	6,011,700
Refunding E	2003 to 2019	4.49%	3,125,658	2,814,113	2,832,121
Refunding C,D,F,G,J & K	2003 to 2016	2.5% to 5.25%	17,953,357	16,393,513	17,367,574
TOTALS			\$95,004,263	32,800,701	37,808,589

C. Revenue Bonds

In December of 1998, Water Works issued a Revenue Bond, in the amount of \$19,358,172, to the State of Wisconsin Safe Drinking Water Loan Program. This bond supports loans to the Water Works for water quality capital projects, or reimbursement for capital expenditures related to water quality, up to the face value of the bond. The Revenue Bond borrowing authority was closed in 2004 and the final loan amount stayed at \$17,559,378. Loan covenants provide for the monthly escrow of revenues to repay the debt plus interest. Regardless of loan proceeds disbursement, the final maturity of the Revenue Bond is May 1, 2018. Revenue bonds outstanding at December 31, 2004 and 2003 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2004	Principal Balance at Dec. 31, 2003
SDW-1	2003 to 2018	2.64%	\$4,873,153	3,814,654	4,037,527
SDW-2	2003 to 2018	2.64%	1,618,213	1,266,720	1,340,729
SDW-3	2003 to 2018	2.64%	5,001,067	3,914,783	4,143,508
SDW-4	2003 to 2018	2.64%	4,148,305	3,247,250	3,436,973
SDW-5	2003 to 2018	2.64%	1,918,640	1,501,892	1,589,641
TOTALS			\$17,559,378	13,745,299	14,548,378

D. Debt Service Requirements

The maturities of the outstanding principal and related interest requirements as of December 31, 2004 are as follows:

Year	GENERAL OBLIGATION BONDS		REVENUE BONDS	
	Principal	Interest	Principal	Interest
2005	\$4,851,413	1,612,381	824,280	351,996
2006	4,692,226	1,357,704	846,041	329,947
2007	3,362,249	1,120,280	868,376	307,317
2008	2,845,339	959,533	891,301	284,089
2009	1,989,325	851,167	914,832	260,248
2010-2014	12,335,300	2,493,937	4,949,440	921,006
2015-2019	2,724,849	199,551	4,451,029	238,841
TOTALS	\$32,800,701	8,594,553	13,745,299	2,693,444

E. Advance Refundings

In prior years, the Water Works defeased certain general obligation and revenue bonds by placing the proceeds of new bonds in an irrevocable trust to provide for all future debt service payments on the old bonds. Accordingly, the trust account assets and the liability for the defeased bonds are not included in the Water Work's financial statements. At December 31, 2004, \$17,680,326 of bonds were considered to be defeased.

5. Revenue Bond Debt Covenants

Fiscal Year	Gross Revenues	Debt Coverage Expenses	Net Revenue Available for Debt Service	DEBT SERVICE REQUIREMENTS			Coverage
				Principal	Interest	Total	
2003	\$74,149,404	49,796,219	24,353,185	803,079	373,477	1,176,556	20.70
2004	71,545,814	47,884,202	23,661,612	824,280	351,996	1,176,276	20.12

Gross Revenues is defined as total revenues plus interest income. Debt Coverage Expenses is defined as total operating expenses minus depreciation.

The revenue bonds debt service coverage ratio requirement is the greater of 1.1 or the highest debt service coverage ratio with respect to any other debt obligations payable from the revenues of the water system.

At December 31, 2004 and 2003, there were no other debt obligations payable from the revenues of the water system.

6. Retirement Plan and Other Post-Employment Benefits

Pension Benefits

Plan Description—The City makes contributions to the Employees’ Retirement System of the City of Milwaukee (the “System”), a cost-sharing multiple-employer defined benefit pension plan, on behalf of all eligible City employees. The System provides retirement, disability, and death benefits to plan members and beneficiaries. The City Charter assigns the authority to establish and amend benefit provisions. The System issues a publicly available financial report that includes financial statements and required supplementary information for the System. That report may be obtained by writing to the Employees’ Retirement System of the City of Milwaukee, 200 East Wells Street, Room 603, Milwaukee, WI 53202.

Funding Policy—Plan members are required to contribute, or have contributed on their behalf, a percentage of their annual earnable compensation equal to 5.5%, 6%, 7% and 7% for general City employees, police officers, firefighters, and elected officials, respectively. The City is required to contribute the actuarially determined amount. The City Charter assigns the authority to establish and amend contribution requirements. The Water Work’s contribution to the System for the years ending December 31, 2004 and 2003 was \$985,608 and \$929,322 respectively and is equal to the required contributions on behalf of the plan members for the year.

Deferred Compensation

Employees of Water Works are eligible to participate in the City’s deferred compensation plan. The City is the trustee of the plan and accounts for the activity in the Pension and Other Employee Benefit Trust fund. Contributions by employees of Water Works to the Plan during 2004 and 2003 were \$1,115,876 and \$1,027,054 respectively.

Other Post-Employment Benefits

The City provides post-employment medical and life insurance coverage for substantially all retirees. Such benefits are recorded when paid. These costs are recorded in the City of Milwaukee General Fund. The Water Works’ portion of these costs cannot be reasonably estimated for the years ended December 31, 2004 and 2003.

7. Related Party Transactions

A summary of significant revenue and expense transactions between the City and Water Works for 2004 and 2003 are shown below:

		2004	2003
Revenues (receipts from the City):	Water Consumption	\$317,172	299,278
Expenses and transfers (payments to the City):	Payment-in-lieu-of-taxes	7,899,648	7,723,956
	Employee Fringe Benefits	5,835,822	5,734,425
	Administrative Services	830,386	913,452
	Electrical Equipment Maintenance	628,711	858,823
	Motor Vehicle Usage and Maintenance	766,761	638,512
	Street Repairs	2,996,067	3,966,787
	All Other Services	2,576,841	2,573,240
Total Payments to City		\$21,534,236	22,409,195

The Water Works also acts as a billing and collection agent for sewer and other municipal charges and is reimbursed for costs incurred in providing such billing services.

The City purchases the delinquent water and sewer accounts receivables of the Water Works at the unpaid amounts. Any subsequent uncollectible accounts are absorbed by the City.

The Water Works has an annual maximum contingent liability of \$200,000 for general liability claims. Claims in excess of this amount, if any, are the liability of the City.

8. Regulatory Agency

Certain PSC reporting requirements give rise to differences between revenues and expenses that are included in the PSC reports and these financial statements. The more significant of these differences are as follows: (1) the amount of payment-in-lieu-of-taxes allowed for PSC purposes exceeds the amount of taxes actually paid; and (2) operating transfers to the City of Milwaukee are reflected as miscellaneous adjustments to Retained Earnings for PSC purposes, rather than being included in the computation of Net Income.

The effect of such differences on net income are as follows for the years ended December 31, 2004 and 2003:

	(Thousands of Dollars)	
	2004	2003
Increase in Net Assets as shown in accompanying financial statements	\$12,219	12,259
Donated Land		17
Amortization of deferred credits resulting from Contributions In Aid of Construction (CIAC) reclassification	811	—
Net Income as Shown on PSC Reports	\$13,030	12,276

9. Commitments and Contingencies

The Water Works is generally committed under the terms of various contracts for construction of improvements and additions to the Water Works system. Contract terms provide for partial payments as construction progresses with specified retention to assure full contract compliance. Open commitments on such contracts, as of December 31, 2004, totaled \$2,629,451.

10. Transfers and Inter-Fund Balances

At December 31, 2004 and 2003, the Water Works has recorded a due from other funds of \$8,029,835 and \$7,456,077 respectively which in part represents cash held by the general obligation debt fund of the City on behalf of Water Works for the 2005 and 2004 respective principal and interest payments on its general obligation bonds. The remaining balance represents the amount owed to the Water Works as a result of regular advance and reimbursement activities. At December 31, 2004 and 2003, the Water Works has recorded a due to the City (General and Sewer Funds) of \$3,197,724 and \$1,732,373 respectively for sewer maintenance and other municipal fees collected by the Water Works.

The Water Works transfers funds to the City (general fund) for payments in lieu of taxes (PILOT). In 2004 and 2003, the PILOT transfers to the City were \$7,899,648 and \$7,723,956 respectively.

Water Quality Information

The Milwaukee Water Works reported in the 2004 Water Quality Report that our drinking water quality continues to surpass all state and federal regulations, without exception. The report is available at www.water.mpw.net. ***All the chemicals on the following list were tested for but not detected.*** MWW has expanded its monitoring and screening effort to include a new class of emerging contaminants called endocrine disrupting compounds.

2004 Undetected Chemical Contaminant List

INORGANIC CHEMICALS — Antimony, Arsenic, Beryllium, Cadmium, Cerium, Cesium, Cobalt, Cyanide, Dysprosium, Erbium, Europium, Gadolinium, Gallium, Germanium, Gold, Hafnium, Holmium, Iridium, Lanthanum, Lithium, Lutetium, Mercury, Molybdenum, Neodymium, Niobium, Osmium, Palladium, Platinum, Protactinium, Rhenium, Rhodium, Samarium, Selenium, Silver, Tantalum, Tellurium, Thallium, Thorium, Thulium, Tin, Tungsten, Uranium, Ytterbium, Zinc and Zirconium.

SYNTHETIC ORGANIC CHEMICALS — Acenaphthene; Acenaphthylene; Acetochlor; Alachlor (Lasso); Aldicarb; Aldicarb sulfone; Aldicarb sulfoxide; Aldrin; Ametryn; Anilazine; Anthracene; Aspon; Atraton; Atrazine; Azinphos-ethyl; Azinphos-methyl; Bendiocarb; Benfluralin; Benzo(a)anthracene; Benzo(b)fluoranthene; Benzo(k)fluoranthene; Benzo(a)pyrene; Benzo(g, h, i)perylene; alpha-Benzenhexachloride; beta-Benzenhexachloride; delta-Benzenhexachloride; gamma-Benzenhexachloride (Lindane); Bolster; Bromacil; Burachlor; Butylate; Butylbenzylphthalate; Carbaryl; Carbofuran; Carbophenothion; Carboxin; Chlordane alpha, Chlordane gamma, Chlordane, Chlorfenvinphos; Chlorobenzilate; 2-Chlorobiphenyl; Chloroneb; Chloropropylate; Chlorothalonil; Chlorophoram; Chlorpyrifos; Chlorpyrifos methyl; Chrysene; Clomazone; Clopyralid; Coumaphos; Crotoxyphos; Cynazaine; Cycloate; 2,4-D; Dalapon; DCPA; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; Deethylatrazine; Deisopropylatrazine; Demeton O; Demeton S; Desethylatrazine; Desisopropylatrazine; Diazinon; Dibenzo(a,h)anthracene; 1,2-dibromo-3-chloropropane (DBCP); di-n-butylphthalate; Dicamba; Dichlobenil; Dichlofenthion; Dichloran; 2,3-dichlorobiphenyl; Dichlorvos; Dicrotophos; Dieldrin; Di (2-ethylhexyl) adipate; Di (2-ethylhexyl) phthalate; Diethylphthalate; Dimethoate; Dimethylphthalate; 2,4-dinitrotoluene; 2,6-dinitrotoluene; Dinoseb; di-n-octylphthalate; Dioxathion; Diphenzmid; Diquat; Disulfoton; Disulfoton sulfone; Disulfoton sulfoxide; Endosulfan I; Endosulfan II; Endosulfan sulfate; Endothall; Endrin; Endrin aldehyde; EPN; EPTC; Erucylamide; Esfenvalerate; Ethalfuralin; Ethion; Ethofumesate; Ethoprop; Ethylene dibromide (EDB); Etridiazole; Famphur; Fenamiphos; Fenarimol; Fenitrotrion; Fenoxypop-ethyl; Fensulfothion; Fenthion; Fluazifop-butyl; Fluchloralin; Fluometuron; Fluoranthene; Fluorene; Fluridone; Fonofos; Glyphosate (Round-up); Heptachlor; Heptachlor epoxide; 2,2,3,3',4,4',6'-heptachlorobiphenyl; Hexachlorobenzene; 2,2',4,4',5,6'-hexachlorobiphenyl; Hexachlorocyclopentadiene; Hexazinone; 3-hydroxycarbofuran; Indeno(1,2,3-cd)pyrene; Iprodione; Isafenphos; Isophorone; Leptophos; Lindane; Malathion; Merphos; Metalaxyl; Methoxychlor; Methomyl; 1-methyl naphthalene; 2-methyl naphthalene; Methyl paraoxon; Methyl parathion; Dual (Metolachlor); Metribuzin (Sencor); Metsulfuron methyl; Mevinphos; MGK-264 isomer a; MGK-264 isomer b; MGK-326; Mirex; Molinate; Monocrotophos; Naled; Naphthalene; Napropamide; trans-Nonachlor; Norflurazon; 2,2,3,3',4,5,6,6'-Octachlorobiphenyl; Oryzalin; Oxadiazon; Oxamyl (Vydate); Oxyfluorfen; Parathion; Pebulate; Pendimethalin; Pentachlorobenzene; Pentachloronitrobenzene; 2,2',3,4,6-Pentachlorobiphenyl; Pentachlorophenol; cis-Permethrin; trans-Permethrin; Phenanthrene; Phorate; Phosmet; Phosphamidon; Picloram (Tordon); Polychlorinated Biphenols (total); Profluralin; Prometon; Prometryn; Pronamide; Propachlor; Propanil; Propazine; Propiconazole isomer a; Propiconazole isomer b; Prothiofos; Pyrene; 2,4,5-TP(Silvex); Simazine; Simetryn; Stirofos; Sulfotep; 2,3,7,8-TCDD (Dioxin); Tebuthiuron; TEPP; Terbacil; Terbufos; Terbutryn; 1,2,4,5-Tetrachlorobenzene; 2,2',4,4'-Tetrachlorobiphenyl; Thiabendazole; Thiobencarb; Thionazin; Toxaphene; Triademefon; Tribufos (DEF); Trichlorfon; 2,4,5-Trichlorobiphenyl; Trichloronate; Tricyclazole; Trifluralin; Vernolate; Vindoxolin.

VOLATILE ORGANIC CHEMICALS — Acetaldehyde; Acetone; Acrylonitrile; Allyl chloride; Benzaldehyde; Benzene; Bromobenzene; Bromochloromethane; Bromomethane; 2-Butanone (MEK); n-Butylbenzene; sec-Butylbenzen; tert-Butylbenzene; Carbon disulfide; Carbon tetrachloride; Chloroacetone; Chlorobenzene; 1-Chlorobutane; Chlorodibromoacetic acid; Chloroethane; Chloromethane; Chloroprene; 2-Chlorotoluene (o-); 4-Chlorotoluene (p-); Crotonaldehyde; Cyclohexanone; Dibromomethane; 1,2-Dibromo-3-Chloropropane(DBCP); Decanal; Dibromoacetic acid; 1,3-Dichlorobenzene; 1,2-Dichlorobenzene; 1,4-Dichlorobenzene; trans-1,4-Dichloro-2-butylene; Dichlorodifluoromethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; trans-1,2-Dichloroethylene; Dichloromethane; 1,2-Dichloropropane; 1,3-Dichloropropane; 2,2-Dichloropropane; 1,1-Dichloropropanone; 1,1-Dichloropropylene; cis-1,3-Dichloropropylene; trans-1,3-Dichloropropylene; Diethyl ether; 1,4-Dioxane; Epichlorohydrin; Ethyl acrylate; Ethylbenzene; Ethyl methacrylate; Ethyl tert-butyl ether; Heptanal; Hexachlorobutadiene; Hexachloroethane; Hexanal; 2-Hexanone; Isopropylbenzene; 4-Isopropyltoluene (p-); Methacrylonitrile; Methylacrylate; Methyl iodide (Iodomethane); Methylmethacrylate; 4-Methyl-2-pentanone (MIBK); 2-Methyl-2-propanol; Methyl-t-butyl ether (MTBE); Monobromoacetic acid; Naphthalene; Nitrobenzene; 2-Nitropropane; Nonanal; Octanal; Pentachloroethane; Propionaldehyde (Propanal); Propionitrile; n-Propylbenzene; Pyruvaldehyde (Methylglyoxal) Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Tetrahydrofuran; Toluene; Tribromoacetic acid; Trichloroacetic acid; Trichloroacetone; 1,2,3-Trichlorobenzene; 1,2,4-Trichlorobenzene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethylene; Trichlorofluoromethane; 1,2,3-Trichloropropane; 1,1,1-Trichloropropanone; 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,2,3-Trimethylbenzene; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; n-Valeraldehyde (Pentanal); Vinyl acetate; Vinyl chloride; Xylene, total.

ESTROGENS AND OTHER HORMONES — Diethylstilbestrol (DES); Estone; 17alpha-Estradiol; 17beta-Estradiol; Estriol; 17alpha-Ethinyl estradiol; Progesterone; cis-Testosterone; trans-Testosterone.

PHENOLIC ENDOCRINE DISRUPTORS — Bisphenol A; Nonylphenol diethoxylate, isomer mix; Nonylphenol monoethoxylate, isomer mix; Nonylphenol, isomer mix; 4-n-Octylphenol; 4-tert-Octylphenol; Pentachlorophenol; Phenylphenol, total; 2,4,6-Trichlorophenol.

Treated Water Quality

Listed below are contaminants detected in Milwaukee's drinking water during 2004. *All are below levels allowed by state and federal laws.* A list of the hundreds of other compounds not detected in our water quality monitoring effort can be found at:

www.mpw.net/Pages/water/docs/wqr2004.pdf

Substance	Ideal Goals (MCLGs)	Highest Level Allowed (USEPA – MCLs)	Average Value	Highest Level Detected	Source(s) of Contaminant
Aluminum	0.2 mg/L	NR	0.08 mg/L	0.15 mg/L	Water treatment additive; natural deposits
Bromate	10 ug/L	10 ug/L (RAA)	6.5 ug/L (RAA)	NR	Byproduct of drinking water disinfection
Barium	2 mg/L	2 mg/L	0.018 mg/L	0.019 mg/L	Natural deposits
Chromium	100 ug/L	100 ug/L	3 ug/L	4 ug/L	Natural deposits
Chlorine, Total		4 mg/L	1.32 mg/L	1.73 mg/L	Residual of drinking water disinfection
Copper	1.3 mg/L	1.3 mg/L (AL)	0.099 mg/L (AL)	NR	Corrosion of building plumbing systems
Fluoride		4 mg/L	1.17 mg/L	1.7 mg/L	Water treatment additive; natural deposits
Haloacetic Acids, Total	0 ug/L	60 ug/L	2.5 ug/L	4.9 ug/L	Byproduct of drinking water disinfection
Lead	0 ug/L	15 ug/L (AL)	4.8 ug/L (AL)	NR	Corrosion of building plumbing systems
Nickel	100 ug/L	100 ug/L	5 ug/L	6 ug/L	Metal alloys, electroplating, batteries, chemical production
Potassium	NR	NR	1.4 mg/L	1.5 mg/L	Natural deposits
Radium – combined	0 pCi/L	5 pCi/L	0.7 pCi/L	0.7 pCi/L	Natural deposits
Sulfate	500 mg/L	NR	28 mg/L	31 mg/L	Natural deposits
Sodium	NR	NR	7.9 mg/L	10.9 mg/L	Natural deposits
Total Organic Halides	NR	NR	28 ug/L	54 ug/L	Byproduct of drinking water disinfection
Trihalomethanes, Total	0 ug/L	80 ug/L	4 ug/L	12 ug/L	Byproduct of drinking water disinfection
Turbidity		< 0.3 NTU 95 % of the time	0.06 NTU	0.16 NTU	Natural deposits
Total Organic Carbon	TT	TT	1.5 mg/L	2.4 mg/L	Natural deposits
Total Coliform Bacteria	0	<5 % of samples/month	0 %	0.7 %	Naturally present in the environment
Uranium, Total		20 pCi/L	0.54 pCi/L	0.57 pCi/L	Natural deposits

Definitions

AL = Action Level — The concentration of a contaminant that triggers treatment or other requirement that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.

Haloacetic Acids — mono-, di-, and tri-chloroacetic acid; mono- and di-bromoacetic acid; and bromochloroacetic acids

< — “is less than”

Maximum Contaminant Level (MCL) — The highest level of a contaminant that is allowed in drinking water

Maximum Contaminant Level Goal (MCLG) — The level of a contaminant in drinking water below which there is no known or expected risk to health

mg/L — milligram per liter = parts per million

Median — The middle value of the entire data set for the parameter (range from high to low)

NTU = Nephelometric Turbidity Units — unit to measure turbidity

NR — not regulated

pCi/L — Picocuries per liter is a measure of the radioactivity in water. A picocurie is 10^{12} curies

RAA = Running Annual Average — the average of (4) quarterly samples collected in one year

TT = Treatment Technique — A required process intended to reduce the level of a contaminant in drinking water

Trihalomethanes — chloroform, bromochloromethane, dibromochloromethane and bromoform

ug/L — microgram per liter = parts per billion

Milwaukee Water Quality at a Glance

We treat Lake Michigan water at two plants, passing the water through multiple barriers that prevent illness-causing microorganisms from contaminating finished drinking water. The first barrier is ozone gas, which destroys illness-causing microorganisms, controls taste and odor, and reduces chlorinated disinfection byproducts. Following inactivation of microorganisms, the coagulation, settling, and dual media filtration processes remove additional particles. Disinfection maintains bacteriological protection in the distribution system that delivers water to our customers.

Typical Finished Water Values

Parameter	Average Value	Range
Alkalinity	100 mg/L (as CaCO ₃)	95 – 118
Calcium	35 mg/L	27 – 37
Chlorine Residual	0.75 mg/L	0.3 – 1.3
Conductivity	290 uS/cm	280 – 350
Fluoride	0.85 mg/L	0.3 – 1.2
Hardness	8 grains per gallon	7.3 – 9.6
Hardness	134 mg/L (as CaCO ₃)	125 – 165
Iron	0.003 ppm	
Nitrate, as N	0.3 mg/L	0.2 – 0.7
pH	7.50	7.2 – 7.9
Potassium	1.2 mg/L	0.8 – 1.4
Sodium	7.5 mg/L	6 – 12
Temperature	48 °F	32 – 70 °F
Total Dissolved Solids	165 mg/L	122 – 182

Definitions

< = “is less than”	NTU = nephelometric turbidity units
mg/L = milligrams per liter = ppm = parts per million	uS/cm = microsiemens per centimeter
gpg = grains per gallon	

General Information 2004

Howard Avenue Treatment Plant rated capacity	105 million gallons per day (MGD)
Linnwood Treatment Plant rated capacity	275 MGD
Average daily pumpage 2004	121 MGD
Total pumpage 2004	44.3 billion gallons
Total length of all water mains in service	1,960 miles
# of meters in service	161,161
# of fire hydrants in service	19,758
Population served	830,719
Area served	172 square miles
Average daily consumption per person	54 gallons
Cost of drinking water	four gallons for one cent
Date of original organization	April 18, 1871
Retail customers (water, billing service, maintenance) ...	Franklin, Greenfield, Hales Corners, St. Francis, West Milwaukee
Wholesale customers (water only)	Brown Deer, Butler, Greendale, Menomonee Falls, Mequon (utility service provided by We Energies Water Services), Milwaukee County Grounds facilities, New Berlin, Shorewood, Wauwatosa, West Allis.

Use Water Wisely

In Milwaukee, you save money when you conserve water. You save on the cost of the water, the cost of sewer treatment charges, and the cost of sewer maintenance charges. This is because sewer treatment and sewer maintenance fees are based on the amount of water used. It means that by using water wisely you make a big difference on the amount of your Municipal Services bill.

The average family in Milwaukee uses 19 hundred cubic feet (Ccf) of water per quarter. This “average” family pays a total of about \$82 for water usage, sewer treatment usage, and sewer maintenance per quarter. Check your most recent Municipal Services bill. Look at the usage charges only. How do they compare to the average of 19 Ccf and \$82 for usage charges only? If there is a big difference, you can do two things to lower your costs: check for and repair any leaks, and conserve water.

Check for leaks by turning off all the water flow in the building, including faucets, dishwasher, washing machine, and outside taps. Find and observe the dial on the water meter. If the dial on the meter is turning, there is a leak.

Watch for dripping faucets and replace worn faucet washers. To test for a toilet leak, add a few drops of food coloring to the toilet tank. If the coloring appears in the bowl after a few minutes, the toilet is leaking.

Fixing running toilets and leaky faucets can make a big difference in lowering your Municipal Services bill. Repairing a leak pays for itself quickly. The maximum toilet leak running with the flush ball or flapper valve not seated wastes over 11,500 gallons per day, costing \$4,200 per quarter for water use and sewer charges. A steady drip from a faucet can waste 170 gallons a day, or cost \$60 per quarter.

A lot of water goes down the drain needlessly because it has always been plentiful and inexpensive. Everyone must become conscious of the amount of water they’re using and learn to conserve this precious resource.

For additional information please see <http://www.wateruseitwisely.com/>

Home water conservation guide: www.h2ouse.org

Milwaukee Water Works

Safe, Abundant Drinking Water.

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www.water.mpw.net

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